VOL. LXXVI. No. 2923. **The Builder.** FEBRUARY 11, 1899.

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Details of West Door, Chartres.—Drawn by Mr. E. Bennett ..... *Double-Page Ink-Photo.*
"Brahan," Perth.—Mr. F. W. Bedford, A.R.I.B.A., Architect ..... *Double-Page Ink-Photo.*
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Tests with Fire-Resisting Materials.

THE systematic testing of fire-resisting materials is a subject which calls for attention, seeing that the information available as to the resistance of special materials or systems of construction is as yet so very incomplete. The most conflicting theories are constantly being put forward; fires show very different results under identical circumstances; and rival patentees put forward the most anomalous claims. Reliable data are almost unobtainable, and unless the architect or engineer has really made a special study of fire-protection and fire-proofing materials, he is scarcely at present able to conscientiously advise his client. With the present year the question of systematically testing the fire resistance of materials and methods of construction promises, at last, to be practically dealt with at the testing-station of the British Fire-Prevention Committee, near Regent's Park, briefly described in our last issue.

Taking the Committee's programme into consideration, it may be well to point out what has been done outside our own country in fire tests of this description. Unfortunately, however, even the field abroad is often but a small one, for though we should have expected a country like Germany to have taken up the subject with that seriousness that is characteristic of the Teuton, very little has been done there; and even in the States, where the subject of fire protection takes a leading position in technical science, the question of independent investigation has almost been neglected. Nevertheless, Germany affords us three highly instructive series of tests—minor investigations though they may be—one at Berlin and two at Hamburg; whilst the United States can boast of three series of experiments carried out respectively at Denvers, Brooklyn, and New York, which each have merits of their own. The first of these tests is the series at Denvers in 1890, the last those at New York in 1897.

As a matter of fact, the tests at Denvers form that stepping stone towards independent investigation which is so much wanted. Though not absolutely independent tests, or even official tests, they rank very nearly as such, inasmuch as they are competition tests between rival makers carried out before a fairly independent tribunal. The rival makers were competing for an order; the makers, the client, and his professional advisers were well represented, and the results were carefully recorded. Tests of this description are known in the States as "competitive" or "comparative" tests, and several minor ones have taken place since those at Denvers; but speaking generally, the latter take the most important position of any investigations of that kind, both in respect to reliability and as a stepping stone to better work.

Next we have, early in 1893, certain experiments at Berlin which have been duly reported in our columns. Here, again, the competitive element is somewhat as before, inasmuch as the tests were held with the view of allotting certain prizes presented by the underwriters of Germany in connexion with the Accidents Exhibition. It had happened in this exhibition that a special group had been allotted to fire protection, and this group had been sub-divided into three sections. The first of these dealt with the extinguishing of fire, the second with the limitation of fire, and the third with the prevention of fire. As prizes could not be awarded to exhibits in the last two sections without some suitable test having been made, a special committee was formed to attend to these tests and award the prizes, and this committee was thoroughly representative of the local architectural and engineering societies, the insurance companies, the municipality, and the fire brigade.

The third series of tests to which we would here refer was undertaken in the same year at Hamburg, under the auspices of the Hanse authorities. In this case, again, a special committee had charge of the matter; but as the experiments were carried out with the aid of public funds, the members of the committee were (somewhat unwisely) selected only from among the public officials. The works and engineering boards of the city, the fire brigade, and the municipal insurance fund were represented. Here we have a case where the tests were carried out with the specific purpose of obtaining certain results, to be applied in the construction of certain public works; the individuality of the maker, the nature of the material, or the character of the patent were minor considerations, the sole object being to discover materials or systems of construction best adapted to fulfil certain local purposes. If anything, these investigations were more of the character of a private client's test, the client in this case being an official body. They can scarcely be termed independent, as neither the architect nor engineer in private practice were in touch with the matter, and the whole investigation was treated in a somewhat democratic spirit. The fourth series was similarly carried out at Hamburg by the same committee in 1895, when further data were required regarding methods of construction to be locally adopted.

Next we have the series of tests carried out at Brooklyn, U.S.A., commencing in 1896. In this instance the work was done by an independent committee comprising representatives of the Architectural League, the American Society of Mechanical Engineers, and the Insurance Tariff Association, and we find that happy combination of architects, engineers, and the representatives of the commercial interests which is so desirable. The thoroughly scientific and independent character of the Brooklyn work merits all praise, but, unfortunately, owing to internal dissensions, little progress has as yet been made, and, in fact, only one report has so far been issued.

The last of these investigations which calls for notice is that of New York, where the Superintendent of Buildings undertook a series of tests. The arrangements, as at Hamburg, were here again in the hands of certain officials, and there was no representation of the technical and insurance interests. The purpose in view was to obtain certain data for the local building regulations. These investigations, by the bye, have been looked upon rather doubtfully, owing perhaps to the not enviable reputation of the Building Authorities of New York. But for all that they appear to have been carried out in a very business-like manner, and a number of valuable data are available from the results.

It will thus be seen that such of the foreign investigations as call for attention have either been independent ones or official ones. Further, that the official ones have

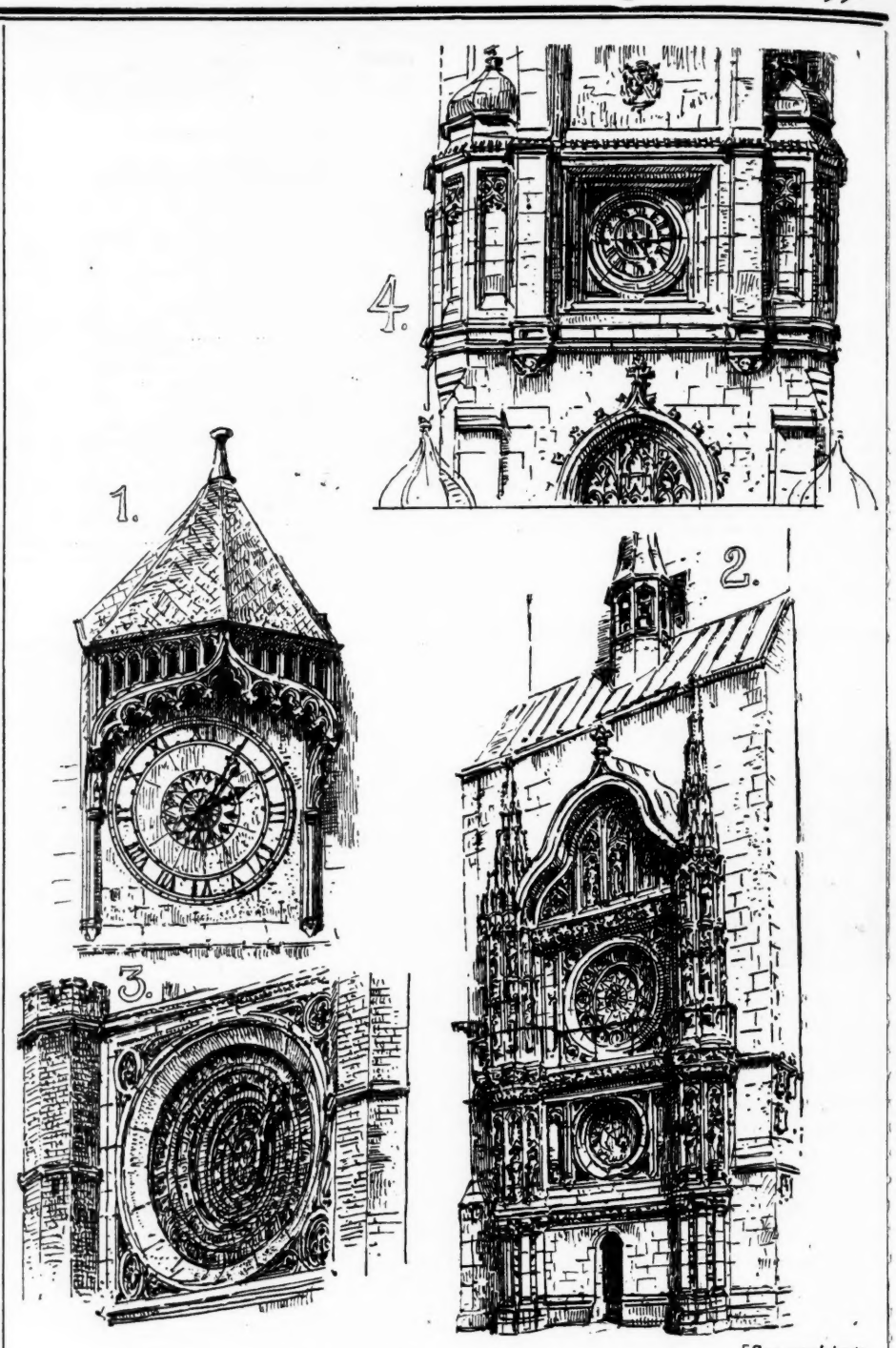
generally been arranged with some specific object in view, and solely in the interests of the Public Authority undertaking them, while the independent tests were arranged in the interests of science, before men representative of the various interests affected. Their character was essentially one of general utility.

Some particulars as the methods employed may be of interest. For the Denvers tests, which were comparative investigations, a number of small huts were erected with a view of testing small sections of flooring only. We might in fact say that a number of miniature furnaces were erected which were stoked with the ordinary heat-generating materials. At Berlin, an old house was adapted for the purposes of tests, each room being dealt with in a different manner by the various patentees, and fires were lit in rotation, under conditions which would resemble those of an actual outbreak. Floors, columns, partitions, doors, and in fact a most varied assortment of building materials, &c., were thus tested in a rough-and-ready fashion. At Hamburg the resistance of upright supports and stanchions alone was under consideration, and here we find a special cylindrical gas-oven, which was so constructed as to enclose a few feet of the column or stanchion. The data thus obtained were no doubt of a scientific character, and absolutely reliable; but whilst Berlin was extreme in its rough-and-ready practical representation of fire, the conditions under which the supports were tested at Hamburg were entirely different from those likely to occur in actual fires, and the results obtained will be of more use in the laboratory than in the architect's office. At Brooklyn, the stanchion and column alone has so far been under investigation, but the data are of far greater practical value than those last referred to, as the conditions were essentially similar to those of an actual fire. Whole columns and whole stanchions were tested in a large testing chamber. Gas, it is true, was used, but here in a manner that was thoroughly practical. At the New York tests floors alone were under investigation, numerous special huts being built for the purpose, but the firing was with ordinary combustible material, which does not allow of an exact regulation of temperature.

Altogether, with the exception of the Brooklyn tests, the work so far done abroad has been of a somewhat inappropriate character; and though we must, of course, be grateful to those who have obtained the few data available for us, a great deal of the labour involved seems to have been misplaced, and better results should be obtainable from all the expenditure of time and money involved. Entirely irrespective of reliability, the independence of the investigations has so far been doubtful excepting at Berlin and at Brooklyn. The official tests have suffered from red-tape and onesidedness.

What now appears to be of importance, when the British Fire Prevention Committee is starting its first series of investigation, is that besides assuring an absolutely independent trial before representatives of the professions primarily interested, none of the extremes should be entered into that might tend to make the results unserviceable. The essentially practical but rough-and-ready test is quite useless, but the scientific laboratory test, in which practical conditions are ignored, is similarly valueless. We desire to know, reliably and from an independent source, what certain materials and certain methods of construction will do under the normal conditions of an outbreak of fire, and we must have a plain record of what those normal conditions were, with the temperatures gauged to a nicety, and loads, pressure, application of water, and even wind and weather, clearly notified. At the same time it should be added that we do not require the opinions of those undertaking the tests. A plain statement of facts, without any opinion or criticism, is what should be attempted; and the Report which gives the conditions and results concisely, and in such a manner that any architect, engineer, or insurance inspector can apply the results to the special building he has in mind, will be the most serviceable. In other words, we require a practical investigation, conducted and recorded on thoroughly scientific lines, and it will then rest with the architect to decide whether Mr. A's or Mr. B's floor is most suitable for the tenement house he is building in the suburb, or for the bonded warehouse in the dock district. He will know if Mr. C's or Mr. D's door is most suitable to meet the requirements of the Building Act for houses in which there are both tenements and business premises, or for the proscenium wall which stands between the stage and the auditorium of a theatre.

When we can have such reports drafted in a practical and concise manner, regarding the principal building materials, &c., used in the United Kingdom, we shall not so often find fire-resisting construction misapplied as it is at present: flats, for instance, divided from one another by floors which in costliness and weight are suited to the warehouse class only; and the warehouseman thinking himself absolutely safe in a building where the floors would not stand for thirty minutes under the high temperatures generated by his stock, though they might last for hours in a tenement house, where there is only the ordinary furniture to burn. And in other respects the result should be a boon, not



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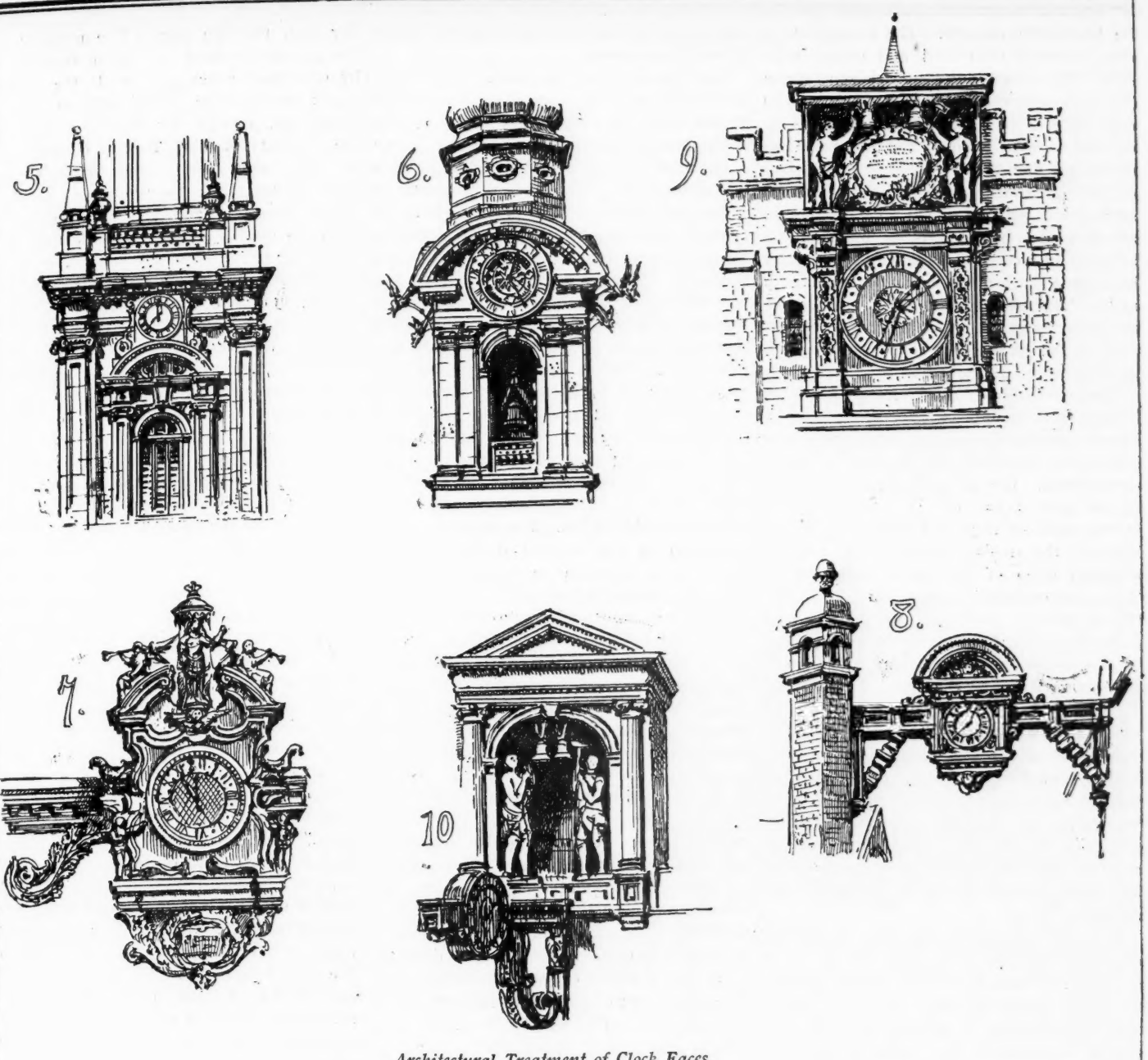
Architectural Treatment of Clock Faces.

1. Würzburg. 2. Prague. 3. Hampton Court. 4. Christ Church, Oxford.



Architectural Treatment of Clock Faces.

5. At Würzburg 6. At Innsbruck. 7. St. Magnus, London Bridge. 8. St. Peter le Poor. 9. Rye Church. 10. St. Dunstan, Fleet-street.

only to professional men and their clients, but also to the fire-proofing patentees and manufacturers, who would at last have some hall-mark for their goods.

ARCHITECTURAL TREATMENT OF CLOCK FACES.

AS clocks form very important features in our public buildings and churches, it seems strange that, too often, no provision is made for them, and that sometimes, after the tower or front of the edifice has been completed, a hole has to be cut through the wall and a dial planted on in such a way as to be a great disfigurement to the architectural elevation. We were looking at a new church a few days back where this operation had been carried out with the worst possible effect. The tracery of the belfry-window had been blocked up and painted black, and on to this had been fastened a skeleton iron dial. The effect was like the face of a man who had a black eye, protected by one of those gauze "goggles" which are occasionally worn when the eye has been seriously injured; and it is quite remarkable what a dissipated, almost disreputable expression it gave to the tower. Another very disfiguring method of applying a clock-face to a building is to block the lower portion of a window or a pair of windows with a round-headed panel, to which the dial is affixed, or upon which it is pointed. Arcades are sometimes cut away and mutilated to make space for the clock, or bulging excrescences provided on either side of a pinnacle. In fact, it would seem as if every ugly expedient which perverted ingenuity could devise had been had recourse to, in order to make this feature a disfigurement to buildings instead of a point of interest.

Probably most of these ugly make-shifts arise from the fact that clocks are often "after-thoughts," and are not set up until long after the building has been completed, so that the architect has no voice in the matter, and the clock-maker, working upon his own initiative, simply considers the question of how to fix "the face" where it can be seen to the best advantage, irrespective of its effect upon the building.

Architects, however, are sometimes to blame. What could, for instance, be more clumsy and ugly than the position and design of the clock at St. Anne's, Soho? The lozenge-shaped enclosure to the dial which some Gothic architects adopt, is certainly unsatisfactory, as it gives a restless appearance, especially when, as we have sometimes seen, the lowest point of the lozenge comes just above the head of a pointed-arched window. Another disagreeable appearance is given by having a clock face on one side of the façade of a building, matched by a glazed circular window on the other; the two never look the same size, and it gives an absurd impression of the building winking at you. These defects should always be most carefully avoided, because all good architects know that every building has a distinctive expression, like a human countenance (of course, some more and some less, but the expression should be there or the design will be without life or interest); some architectural designs give an impression of cheerfulness, others of gravity, sometimes even of sadness—some buildings frown, others smile. Now it is quite evident that a winking or wriggling clock may convert the whole into ridicule.

Well-designed clock faces and "houses" are to be found of almost every date, and though few mediæval examples have come down to our time, yet some of them are of great beauty. That which we give from "Graf Eckert's tower," at Würzburg, in Bavaria, is a remarkably elegant example (fig. 1). It probably dates from the close of

the fourteenth century. The canopy is of wood covered with lead and roofed with slate. The sumptuous example from Prague (fig. 2), though a beautiful work, is scarcely so applicable to modern requirements, as it is erected so low down in the tower and has two faces, one above the other, the lower one being "an astronomical dial." Both are surrounded with enriched mouldings, and are divided from each other by a gallery adorned with carving. Two lofty tabernacled buttresses flank the structure, adorned with niches filled with statues. The clock-house is a plain structure, projecting a few feet in front of the great tower, and furnished with a *flèche* containing the bell.

The well-known astronomical clock at Hampton Court Palace (fig. 3) presents a less architectural appearance than the two last-named examples, but the dial is highly ornamented. It was made for Henry VIII. in the year 1540. Mr. Law thinks that it is the work of Nicolas Cratzer; probably, however, the architectural frame-work which encloses it is of somewhat earlier date. The next example is the clock face in the "Tom tower" at Oxford (fig. 4). This is a work of Sir Christopher Wren, erected in completion of the gateway tower commenced by Cardinal Wolsey. We see here an example of an excellent arrangement for clock faces, frequently adopted by Wren; it consists in placing immediately beneath the lantern a kind of low storey or "attic" for the accommodation of the clock dial, a plan which was afterwards frequently adopted by Hawksmoor and Gibbs, and forms one of the best features of their striking steeples. St. Martin's and St. Giles are good examples.

Not unfrequently the clock face is inserted above the belfry window, and although it is somewhat difficult to make it combine gracefully with the architectural lines of the tower in such a situation, it has been done effectually, as is shown in the examples we give from Würzburg and Innsbruck (figs. 5 and 6); the latter especially has a very picturesque appearance. St. Olave's, Southwark, is a less pleasing attempt. Hawksmoor has, in his fine church at Limehouse, adopted a scheme which may be regarded as a combination of the two previous ideas; the clock is placed over the belfry window, but the pinnacles are grouped together in such a way as to suggest a lantern above the tower.

The plan so frequently followed in London City churches of corbelling out the clock at right-angles to the wall or tower of the building is a common-sense and pictureque contrivance, as it enables those passing along the streets to see the dial very distinctly and from a distance, and is capable of very attractive treatment. Bow Church, in Cheapside, and St. Magnus, at the foot of London Bridge (fig. 7), present good examples. Unfortunately, the last-named church has had its clock mutilated some years back by the removal of the figures which formerly adorned it; in our sketch, however, we have attempted to restore them from a drawing made of the church by Cole about the middle of the last century. Several views are in existence showing the old Church of Saint Peter-le-Poor, in Broad-street. The clock here is shown suspended upon a beam (fig. 8), in form like a bridge, spanning the street and sustained by a turret rising from the east end of the church, on one side, and the wall of a house on the other; this is by no means a bad idea, but can only be carried out where the street is narrow.

That curious class of clocks which work mechanical figures seems to have been known in quite early times. That in the north transept at Wells Cathedral is one of the most ancient examples we know. It is said to have been brought from Glastonbury Abbey, and does not in its present condition exhibit much in the way of architecture. Strasburg is the most elaborate specimen of the kind. The architectural portions are late third pointed work and Renaissance of various dates; the Gothic part bears some resemblance in arrangement to the fine example at Prague, but is later and less magnificent. It is, however, an interesting, though somewhat questionable article of Church furniture; too much of the "puppet-show" order; the cock which flaps his wings and crows with a wooden tone of voice might be more appropriately perched outside the sacred edifice. Probably he is not a portion of the original design, as the structure upon which he roosts is later in style than the main body of the work.

English examples where the figures strike the bell are not uncommon. At Rye Church (fig. 9) the curious clock possesses two such figures, and the whole design is not unpicturesque. Perhaps the most celebrated example in London was formerly at St. Dunstan's, Fleet-street, and is now partly preserved in the Regent's Park (fig. 10). It is by no means a handsome object; the "shrine" for the figures is far too like a summerhouse. It would be by no means judicious to revive these acrobatic clocks in our public buildings at the present day, and we cannot regard them as appropriate features in churches. A modern example in the City is too well known to need description. But it would certainly be well to give more attention to the clock faces of our public buildings than is usually done. In one case, at least, we have achieved a marked success—the finely designed clock face of the Palace of Westminster.

NOTES.

The Workmen's Compensation Act.

THERE seems to be some kind of idea prevalent that the session will see some amendment made in the Workmen's Compensation Act. We do not think that this is likely. We have insisted frequently that the limitation in regard to the buildings in which workmen who are employed in them may obtain compensation should be abolished. It would be an easy and simple alteration. But any other legislation seems yet to be premature. Much inquiry as to the financial working of the Act would be required before it can be altered, and sufficient time has not yet elapsed to form a fair judgment on it. The coming into working order of such a statute is necessarily a cause at first of inconvenience. It disturbs the existing order of things. Besides, Parliament has many urgent calls on its time. It has done something for working men, and it will not be in a mood to touch this question again at present.

London (Welsh) Water Supply.

THE proposition of the London County Council to supply the Metropolis with water from Wales was very severely criticised in a paper by Mr. R. E. Middleton, C.E., read before the Sanitary Institute on Wednesday last, the 8th inst. The majority of the arguments used are worn threadbare by continual reiteration, and the paper might well have been written thirty years ago, except for the excerpts from the Report of the Royal Commission of 1892 and some well-timed obsertions in reference to the East London Water Company and the recent drought. Still, no one is better qualified than Mr. Middleton to represent the present position of the water companies and their sources of supply, and his case against the Welsh scheme is undoubtedly a very strong one. It is well that both sides should be heard. Briefly put, the author urged that the Balfour Commission showed that there is a superabundance of water in the Thames Valley, which actually comes down the river, for the supply of London for any reasonable future period. Bnt, owing to the fact that the volume per diem is extremely variable, it is necessary that the water should be stored at seasonable periods. Further, that much of the water stored, as in the Staines reservoirs now under construction, was obtained at an advantageous point, inasmuch as it was captured higher up the river. Under the circumstances there was no necessity to go to Wales for water, the Welsh scheme being much more costly. Moreover, the quality of the water proposed to be obtained from Wales left much to be desired. The water of a Welsh stream in flood is "the colour of porter, and contains far more vegetable matter than does Thames water." In reference to the demand that the Londoner should refuse to pay his water bill, when he does not get the water through drought or what not, the author asks, pertinently enough, whether the Londoner would be let off were the supply in the hands of a public authority. On the contrary, he would not only have to pay as usual, but would contribute his share in rates for any improvement that may be effected in the supply. We do not agree with much that Mr. Middleton expressed—the statistics given are very curious; at the same time, wholesome criticism is always useful. And, whilst few would endorse the statement that Welsh water in the Yrfon or other valleys, coveted by the County Council, is of such a deep tint as suggested by the author, nobody who has seen the streams would say that the water is fit to drink as it is. There is, however, a difference between vegetable and animal organic pollution, and visible pollution is not always the most dangerous. Mr. Middleton distinctly scores in saying that should the London County Council become the water authority, they would still continue to utilise the present sources of supply in addition to that from Wales; for the Council has said so. Those who regard the present sources of supply from a sentimental standpoint will do well to remember that.

Covent Garden Theatre Improvements.

SOME little time back we expressed the opinion that the change in proprietorship at Covent Garden ought to lead to the material improvement of its equipment. We have now been given to understand that the new owners, *i.e.*, the Grand Opera Syndicate, have decided to thoroughly overhaul the house and bring it into accordance with modern requirements. Numerous improvements are under consideration, and the post of permanent technical adviser,

which has so far only been known in the grand opera houses of the Continent, has been created, and Mr. Edwin O. Sachs invited to fill that position. Seeing the enormous difficulties under which Covent Garden has always laboured in stage mechanism, storage, and lighting, we have every reason to hope for a better tradition in opera when the establishment has been better equipped in a more modern manner. Among the works already in hand is the entire re-lighting of the theatre, which is being carried out in accordance with the comprehensive scheme originally prepared for the former owner, Mr. Faber. A full programme of the proposed works is to be shortly issued.

Applications of Electricity.

ON Monday afternoon, at the London Institution, Mr. H. W. Handcock gave an interesting lecture on "Everyday Applications of Electricity." Starting with the electrolysis of brine, he showed how this simple experiment has led recently to great industrial developments in the manufacture of caustic soda and bleaching powder. A possible further development is also the making of "electrozone," which is used for sterilising and deodorising purposes. The extensive scale on which electrolysis is used in the arts he illustrated by saying that the bulk of the copper used in this country had been refined electrolytically. A novelty shown was the telescriptor of Mr. Shepherd. It is practically a printing telegraph which can be used as an adjunct to the telephone. When switched on to the circuit instead of the telephone a printed message can be sent, and a record of it is made at each end. It should prove very useful for confirming orders by telephone, or for switching into the circuit during temporary absence from the telephone. In this country there would be legislative difficulties in the way, owing to the Government monopoly; but abroad it would have a wide field. Mr. Handcock mentioned how the electric motor was causing a revolution in engineering practice, and how extensively it was used in naval warfare for working turret guns, gatling guns, Brennan torpedoes, &c. An interesting exhibition was given of the useful applications of electricity to book-binding, workmen showing how rapidly lettering, embossing, and gilding could be done by electrically-heated tools. A Thomson welding machine also was shown at work, and the ease and startling rapidity with which difficult welds were made by it were well illustrated. Numerous other applications were shown, some accidental, illustrating fire risks, as when an electric brander set fire to a sheet of brown paper, and a roburite fuse nearly set fire to the lantern screen; but the lecturer, although perhaps he attempted to give too much in the time at his disposal, gained the closest attention of his audience from first to last.

Hospital at Bry-sur-Marne.

ON Saturday last the President of the Republic opened the new Departmental Hospital at Bry-sur-Marne, an admirably planned and constructed building which does the greatest credit to the architect, M. Jacques Lequeux, already known as the architect of a number of buildings—barracks, schools, hospitals, &c., in the suburbs of Paris. Unfortunately the President, while conferring numerous "récompenses" on persons quite unconnected with the design or execution of the work, omitted either to reward or congratulate the architect—an omission certainly not usual in France, and more in accordance with English habits in this respect.

The Kent Martyrs' Memorial.

WE noticed the other day a paragraph in a daily paper referring to the intended erection of a memorial to the martyrs of Kent, in the Martyrs' Field at Canterbury, in which it was stated that "the widespread interest which has been aroused throughout the county in the movement to perpetuate the memory of the martyrs who were burnt at Canterbury is shown by the gratifying response which has been made to the appeal of the Committee." As usual in English newspapers, no mention was made of the nature of the design, or of the designer's name. On inquiry we find that the design is by the City Surveyor of Canterbury, who is an engineer, and the result of course is a mere engineer's design—a stele in two heights, defined by wretched mouldings, and crowned by a coarse and common-place cross; the base of the whole resting on a heap of artificial rock-work: another example of the way these things are done in England. It appears that the Dean of Canterbury is the prime mover in the matter. One cannot perhaps expect very much from Dean Farrar's æsthetic perceptions, but surely it might have occurred to him to get an artist to make something beautiful and expressive, instead of putting up a monument destitute of originality and beauty, and only noteworthy for its size and material—35 ft. of coarsely treated granite.

The Pastel Exhibition.

THE first exhibition of the Pastel Society, at the rooms of the Institute of Painters, in Piccadilly, is an interesting event in the Art-world, and we hope it is the precursor of many similar exhibitions. Pastel is a beautiful and suggestive medium of which the modern French school long ago found out the value, but which has not been very much cultivated in this country. But we are a little disappointed with the exhibition nevertheless. Pastel, like etching, we had always regarded as an art for the comparatively rapid expression of artistic ideals; figure studies, first studies of landscape effect, &c. There is a little too much here of mere realistic picture-making, such as does not specially represent the qualities of pastel. There are, however, some very interesting works. Some of the French exhibitors are naturally among the best. M. Besnard exhibits a capital figure-study, "After the Bath" (155), and M. Levy-Dhurmer's "La Cruche Cassée" (1) is a good figure study in a very different manner. How well the art lends itself to portraiture is shown in Mr. Watts's beautiful portrait of "Lady Mount Temple" (155) and Mr. Boughton's charming profile half-length (15), and one or two others. Mr. Holman Hunt sends a characteristic study of the head of "An American Pilgrim" (98), far more pleasing in tone and texture than most of his oil-painted heads. Among other figure subjects are Mrs. Deric Hardy's "Winter Sheltering Sleeping Spring" (94), a pretty fancy; Mr. Rolshoven's very well executed but rather vulgar nude under the title "La Venere Bruna" (295), and some clever studies of labourers in an iron foundry by M. Josselin de Jong (189 to 191). Among the landscape studies which have character and originality Miss Anna Nordgren's "Clouds" (13), Mr. Edward Stott's "A Willow Pond" (115), two small landscapes by Mr. Onslow Ford the sculptor (151, 152), M. Lhermitte's "Entrance to Village" (197), and M. Fritz Thaulow's studies of river-side scenes in snow, which are very clever but a little mannered—all a repetition of the same effect.

The Water-Colour Society Art Club.

THE Royal Water-Colour Society Art Club, which appears to be a society chiefly of amateurs, held a conversazione at the Rooms of the Society of Painters in Water-colours, on Wednesday evening, and the collection of drawings there has been on view for the remainder of this week. The prominent features in the exhibition were two small collections of works by J. F. Lewis and J. D. Harding, which are of special interest. The work of Harding carries some of us back to the recollection of our early drawing lessons from Harding's series of lithographed sketches of subjects arranged in progressive order; and some of the beautiful studies of trees, in black and white, exhibited on this occasion, are the same kind of work in a more elaborate form. Harding's fine qualities as a sketcher are admirably shown in the slightly-executed bu artistic view of "Acqua Morte, Verona," in pencil on brown paper touched with white. The central large drawing, in finished water-colour, is a fine and characteristic example of the water-colour landscape art of Harding's period, with a beauty and completeness of its own, though in what now appears a very conventional style. The Lewis drawings include a splendid finished work, but the chief interest of the collection lies in the sketches, which show the serious and painstaking spirit in which Lewis laid the foundation for his work. The remainder of the collection exhibited, numbering about 350 drawings, shows a remarkably good standard of (mostly) amateur work. Among the drawings specially worth notice are Mr. G. F. Glennie's four landscapes (13-16), Miss Sophia Boycott's sketches in Durham and Ely Cathedrals, Mr. Harding Smith's "Seaton Bay" (26), Miss Maud Glennie's "Study of a Birch Tree' (27), Miss Every's "Kersey Church" (29), admirable as a landscape composition; Mr. Hallam Murray's drawings at Rothenberg (46, 47), Miss McCracken's "Canal, Dordrecht" (78) and a number of other sketches; and Mr. Phené Spiers's collection of drawings of architectural subjects, the quality of which is well known to our readers.

Messrs. Dowdeswells' Gallery.

AT Messrs. Dowdeswells' Gallery in Bond-street a painting by M. Eugène Burnand is being specially exhibited; "The Man of Sorrows," one of those rather sentimental conceptions of the figure of Christ which appear meant to appeal rather to the religious than the artistic perceptions; it is a pleasing work enough, but not equal to the subject. Some black-and-white illustrations to the "Pilgrim's Progress" by the same artist are of more interest; his "Giant Despair" is an admirable conception, but he wants imagination for such a subject as Bunyan's allegory; his "Evangelist" is only a preacher "of I know not what sect of dissidents," as the Comte de Florac expressed it, and the "Palace Beautiful" merely suggests a subur-

ban villa at Auteuil, and comes too near turning the allegory into mere prose.

Minor Exhibitions in Paris.

THE exhibition of the "Cercle de l'Union Artistique" has just opened in the Rue Boissy d'Anglas, Paris, and will remain open till March 9. This year's exhibition is a very interesting one, and includes some really remarkable works. M. Roybet's "Ruy Blas" is a piece of executive work of the first order, and M. Detaille is represented by a splendid battle picture of the time of the First Empire, entitled "Le Victoire est à Nous." M. Cazin's "La Plateau" is a very fine landscape. There are some fine portraits by MM. Benjamin-Constant, Bonnat, Carolus-Duran, Chartran, and Humbert, as well as the "Derviches Hurleurs" by M. Gerôme. In sculpture special mention should be made of the works of M. Raoul Verlet and M. Puech. As to the Annual Salon of "Femmes Peintres et Sculpteurs" at the Galerie des Machines, it consists as usual of a collection of many mediocre works, relieved in this case by one fine picture by Mdlle. Rosa Bonheur, "Le Troupeau de Bisons." There are about thirty works in sculpture, all hopelessly commonplace.

Mr. Ruskin's Birthday Honours.

ALTHOUGH we cannot endorse entirely the sentiment embodied in the address presented to Mr. Ruskin on his eightieth birthday by the Ruskin Society of London—"the books you have written contain principles of truth applicable to every branch of art, including the art of Life"—inasmuch as we think the said books contain much that is palpably untrue both in regard to art and life; yet Mr. Ruskin merits the recognition he has received for two reasons at all events—he is a writer of the first order in a literary sense, and he has been all his life an enthusiast, in a time when there has been little tendency to enthusiasm. Many of his opinions on art will not find permanent acceptance; but he has incited people to think that art is something worth caring about, and that is much in these days.

GREEK ARCHITECTURE.*

GREEK ARRANGEMENT OF TEMPLES, &c.

I WILL for the present set aside Pelasgic architecture, as it seems to have had so slight an influence on the subsequent architecture of Greece, except in the shapes of doors and windows, and in the knees of the door and window architraves. I must, however, mention that Herr Puchstein considers that the plinth, torus, and moulding that have so long done duty as the base of the columns in the Treasury of Atreus are early forms of the Doric capital, and certain palm trees get bigger as they get further from the root. I must also beg for a certain indulgence; the new enthusiasm for Greek architecture and archæology has overturned the old edifice of architectural lore. The Temple of Jupiter Olympius, at Athens, turns out to be octastyle, and terra cotta seems to have been the precursor of stone, or used with it. The early examples of Greek art are now sought for in Cappadocia and Pontus, and the Clithonian, or earth deities, are a new Avatar of the old gods and goddesses we learnt about in our youth; a temple to the Καβειροι has been lately found near Thebes, and these earth deities threaten to take much greater importance in ancient worship than heretofore.

I will, however, go at once to the architecture of the Dorians and Ionians. The first thing that strikes us in studying their architecture is its type, the house.

It is to be supposed that the original was conical, with or without a central post; but when I speak of the house, I mean when it had taken a square or oblong form, with vertical walls and a span roof. The house seems to have consisted of a single chamber, or sometimes of two; a long one in the front and a short one behind, with a recessed porch in front extending across the whole building, the lintel supported at each end by the side walls and by two or more pillars between them. It was covered by a low-pitched roof in one span, with projecting eaves, and had two gable ends; sometimes there was a recessed porch at the back, too; afterwards it was found convenient to put an open verandah in front, and then one at the back as well. It appears that the roof trusses bore at each end on the walls—I call them walls though they were probably of wood; these ends of the trusses became the triglyphs. Fergusson suggests that the trusses were made of planks with the ends chamfered, *i.e.*, one for the tie-beam and two for the principals, with the king-post and strutts between them, and the whole pinned to the templates with trenails from the bottom, these features forming the tenia and guttæ.

This theory is ingenious, but unless the early Greeks were short of wood and had saw-mills, the most obvious thing seems to square a tree, for a tree can be squared with an adze or axe, and unless the Greeks were fonder of labour than we are, sawing a tree into planks with a rude hand-saw must have been no inconsiderable task, though they must have had planks for their ships.

Vitruvius says the ends of the trusses looked unsightly, so the early Greeks grooved a piece of board, pinned it on, and painted it blue; and to me this looks a more probable solution than Fergusson's, though in all probability both theories are wrong. This is, however, evident, that the contrast of these vertical grooves with the long horizontal lines of the architrave and cornice, supplied an æsthetic want, which the Greeks and their successors never found any better way of solving, for not only did they use triglyphs to the sides of their peristyles, even after any semblance of framing from the walls of the cella to the peristyle was omitted, but they also used the triglyphs at the gable ends as well. Now if the original truss was put flush with the gable end, as it was, no cross trusses could ever have been used on the angles of the fronts. In the Temple of Theseus there is a continuous sculptured frieze on the walls of the naves through which the trusses would have run, and at the Parthenon there is the pan-athenaic frieze. Here, however, the regula and guttæ are worked on to mark the places where the beams would have come.

The spaces between the trussss were left open for light and air, and were called metopes, according to Vitruvius, though the word does not, I believe, occur in the Greek authors. In Euripides' "Iphigenia in Tauris" (line 110 to 114) Orestes is told by Pylades how he may get into the temple through one of the metopes: "Then when black night has come on, we must try to get the image out of the temple by any scheme we can devise. . . Then will be the time to let down our bodies inside the triglyphs, where there is a vacant space."

From this expression, "inside the triglyphs," we might infer that they were shutters to window openings, and the passage quite justifies Vitruvius' indignant protest (Lib. 4 cap. 2), "Hence we have the imitation of the earliest works to account for the Doric triglyphs and mutules, and not, as some have erroneously said, from the circumstance of triglyphs being introduced as windows, which could not be the case, inasmuch as they are placed on external angles and immediately over columns, in both which situations windows would be absurd in the highest degree, for the tie at the angles of buildings would be entirely destroyed if occupied by windows, and, therefore, the dentils of the Ionic orders might as properly be seen to occupy the places of windows, if the spaces occupied by triglyphs have an origin of such a nature."

Eventually the house was surrounded by an open verandah, built with one row of pillars, afterwards with two rows, and sometimes with the outer row only, and a space between them and the wall, equal to a double row. No sooner was the verandah put all round than there was no means of lighting the house in the old way, for if the metopes or spaces between the trusses were left open they only lit the open verandah, leaving the house in comparative darkness. The method of lighting the house, after the adoption of a verandah all round, shall be investigated hereafter.

Fergusson in his "Principles of Beauty in Art" (1849), and afterwards in his "History of Architecture" (1874), denied that the Greek columns took their rise from wood. I here give you the extract from the first work:—

"I feel quite certain that the modern theory, or that which derives the form of the Doric column from that of the trunk of a tree, first assumed to have been used to support the roof, is quite untenable. No carpenter, then, or even now, could be so absurd as to place an unsquared trunk on a stone step, and then, instead of framing it into the epistylia, place an abacus on it, so as entirely to disconnect it from the thing it supported, and render the whole arrangement so constructively absurd that the first breeze of wind must have unroofed the temple, and blown down the columns. Had the whole been of wood, the pillars would have been squared if the epistylia were, or both would have been left rough; or, at all events, the pillar would have been let into the ground, and framed into the thing it supported as it was at Persepolis, not separated from it by an unmeaning and worse than useless member; and we should now, in the stone copy, have been able to trace this framing together of the parts, as we do in the Lycian and Indian rock-cut examples, which retain their wooden forms for centuries after they had been copied in stone. This we are now able to do in the roof which is, undoubtedly, a copy of a wooden construction; and it is this, apparently, that has misled architects. They have not sufficiently distinguished between the roof, which was of wood, and the support which, like the walls, must either originally have been a brick or rubble pier."

But Pausanias (lib. 5, cap. 20) tells us that when the house of Ænomaus was destroyed by lightning one wooden column remained, which was kept at Olympia as a holy relic; and in lib. 5, cap. 16, speaking of the Heraion or Temple of Juno at Olympia, he says, "The Temple is built after the Doric fashion, and is on all sides surrounded with pillars; in the back part of the Temple one of the pillars is made of oak.

In his "Eliacs," lib. 6, cap. xxiv., he writes as follows:—"In the market place of Elisis, I saw another structure: it was in the form of a low temple, without walls, the roof being supported by oaken pillars."

In his "Arcadics" (lib. 8, cap. x.) he says, speaking of a temple to Poseidon, built by Hadrian, on Mount Alesius, between Mantinea and Vegea:—"He ordered the workmen, too, to build the new temple entirely round the old one; but the ancient temple of Poseidon is said to have been raised by Agamedes and Trophonius from pieces of oak aptly joined together."

Pausanias lived in 174 A.D., during the reigns of Antoninus Pius and Marcus Aurelius. It is as fortunate as it is surprising that these relics of an almost mythical period should have been preserved to confute modern theorists.

I merely mention this to show how much stranger truth is than fiction, for almost every word that Fergusson says is a reasonable hypothesis.

I cannot say what ancient Greek carpenters might have done, and the column has all the appearance of having had its origin in brick, rubble, or stone. All timber forms that have not been perpetuated in stone have naturally perished. We have only a rude representation of the recessed porch, and its pillars in the François vase, one with two pillars and one with three. I must, however, remark that we still put wood posts on stone steps, and tenon the wood into the stone.

When we discuss the orders, we will go more minutely into this question.

When we examine those buildings which have come down to us, and restore on paper those of which we have but ruins, we find the type of "the house" persisted in, not only in small and unimportant buildings, but in those on which the greatest expense has been lavished, that were enriched with every ornament that genius could devise, skill execute, or riches purchase, and dedicated to the highest use, viz., to the service of their deities. Such is the persistence of this type that, with the exception of a few structures that we should now

* Professor Aitchison's second Royal Academy lecture, delivered on Thursday, February 2.

call monuments: every covered building seems to have been confined to it, for whatever purpose the building may have served.

As the architectural proverb says, "It is the roof that makes the house (ware)," I shall not now dwell on open theatres, open market places, or other buildings open to the air.

The odéum or concert-room at Athens, now destroyed, was roofed; as Plutarch tells us in his Pericles:—

"The odéum or music theatre, which was likewise built by the direction of Pericles, had within it many rows of seats and of pillars; the roof was of a conic figure, after the model (we are told) of the King of Persia's pavilion. Cratinus therefore rallies him again in his play called "Thrattæ:"

> As Jove, an onion on his head he wears;
> As Pericles, a whole orchestra bears;
> Afraid of broils and banishment no more,
> He tunes the shell he trembled at before!"

Although the names of buildings and their parts have nothing really to do with architecture, still it is useful to understand the technical names you find in books, and as it is considered in a "gentleman at ease" a mark of neglected education to be ignorant of the ordinary technical words of classic architecture, it must be a reproach to those who are architects by profession.

The Romans for the most part adopted the names of the architectural styles, and of their parts, from the Greeks. I shall therefore not hesitate to give those names to the various structures and parts, by which they are commonly known, noting the cases in which the Romans substituted their own names in place of the Greek. I find too that when Thomas Sandby was Professor of Architecture he must have treated on this subject, for my father copied a drawing illustrating the subject by him. A copy of my father's drawing, by one of his pupils, is exhibited to-night. The house with its recessed porch, or at least when raised to the dignity of a temple, and executed in stone or marble, is called in Greek "Naos en parastasi" *i.e.*, a temple in or between pilasters; or in Roman "Ædes in Antis."

The Temple of Themis at Rhamnus, near Marathon, is an example of this; Amphi-antis is a name that is not used; but the Temple of Artemis Propylæa at Eleusis exemplifies its occurrence.

When the temple has an open verandah in front, and in advance of the wall, or of the open porch, is is called prostyle. The Erechtheum may serve as an example, and the portico of the Temple of Athené Polias in the same building, and the Temple of Demeter at Eleusis.

When the temple has the same feature at both ends it is called amphi-prostyle, of which the temple on the Ilissus is a familiar example, and the Temple of Niké Apteros, or wingless victory, is another. While the Greeks called the back chamber "opisthodomos," the Romans called it "posticum," and the back front, or the back door, the same.

When the temple has an open verandah all round, it is called peripteral, as the Temple of Theseus at Athens; according to Vitruvius, this should have six columns in the porticoes and eleven on the flank, or one less than double the number of the front portico; but it was the Greek custom to put one more column in each flank than twice the number of columns in the portico; this temple, for example, has thirteen, for the Greeks, from being an artistic people, admired a greater length of flank; besides they thought more of the look of their buildings than of their rules, while Vitruvius, typifying the Romans, thought more of their rules, or convenience of the building than of its appearance; for we cannot suppose that it was always convenient to make the length of the nave in one regular and definite proportion to its width. The Greeks not unfrequently deviated from their usual custom.

At the Temple of Apollo Epicurius (Apollo the Helper) at Bassæ in Arcadia, which is hexastyle, there are fifteen on each flank. When there are engaged pillars all round, it is called "pseudo-peripteral," as at the Temple of Zeus Olympios at Acragas, called by the Romans "Agrigentum" and now "Girgenti."

When the temple has a verandah all round, with two ranges of columns, it is called "dipteral," and, according to Vitruvius, should have eight columns in the portico, as the Temple of Artemis at Ephesus.

When the space between the walls and the outer row of columns is equal to that of a dipteral building but is without the second row of columns, it is called "pseudo-dipteral." The Temple of Apollo Smintheus in the Troad is an example, and the great Temple of Selinus, according to Hittorf; but if Wilkins be correct, this temple must have been dipteral. Vitruvius tells us they should have eight columns in front and rear and fifteen at the sides. This temple at Selinus has seventeen, but the Smintheus only fourteen. There is a pseudo-dipteral building at Posidonia (Pæstum) but it has nine columns in its portico.

There is also a temple called "hypæthral," which may mean open to the sky, or may mean one possessing an hypæthros; and about the meaning of this expression much ink has been spilt and much bad blood engendered. According to Vitruvius it has ten columns in the portico.

The front recessed porch in a temple is called the "pronaos;" the temple, or the first chamber of the house, is called the "naos," and in Latin "cella"; and the back room "opisthodomos," in Latin "posticum," and this chamber was mostly used as a treasury and sometimes as a habitation. Demetrius Poliorcetes, when he freed Athens, was lodged in the opisthodomos of the Parthenon, and it was his behaviour when lodged there that so disgusted the Athenians with him, that, after all the benefits they had received from him, they deserted him in his adversity.

Vitruvius tells us "The length of a temple must be twice its width, the cella itself is to be in length one fourth part more than the breadth, including the wall in which the doors are placed. The remaining three parts run forward to the antæ of the walls of the pronaos."

Temples are designated by the number of columns of the front verandah or portico; distyle, or with two columns, are always *εν παρασταsι* or in antis. The pseudo-dipteral temple at Pæstum has three columns, *εν παρασταsι* in the pronaos, always supposing that it be a temple.

Tetrastyle, or of four columns, and prostyle, as the temple on the Ilissus; hexastyle, or six columns, as at the Temple of Thesus at Athens; octastyle, or eight columns, as the Parthenon, and the Temple of Zeus Olympios at Athens; decastyle, or ten columns, as at the Temple of Apollo Didymæus, not far from Posidium and Miletus in Caria; and dodecastyle at the Temple of Demeter at Eleusis.

A few temples or buildings have an odd number of columns; that of Zeus Olympios, at Acragas, has seven columns, and might be called "heptastyle," and the pseudo-dipteral building at Pæstum has nine columns in front and back, and might be called "enneastyle."

We owe a double debt of gratitude to the Dilettanti Society, first for starting a fund for the exploration of the ruins of Greek buildings, for without its aid Stuart and Revett, Gandy, Bedford, Mr. Penrose, and others might never have been able to gratify our eyes, and improve our taste and knowledge; and, secondly, for thus trying to open the eyes, and actually opening the purse-strings of the Government, to whose aid we owe the labours of Layard, Newton, Pullan, and Wood. We owe an equal debt to those who, without its aid, have found temples for us, and published illustrations of them, such as Professors Cockerell and Donaldson, Kinnaird and Railton, Fellowes and others; and we owe no less a debt to those who have tried to discover them, amongst whom I may mention that erudite, travelled, and indefatigable architect and archæologist, Falkener, who has done so much by his writings and illustrations to improve our knowledge of Classic architecture. We, unhappily, know that Loftus was stopped by want of funds from discovering the Palace of Darius at Susa, whose remains, thanks to the energy and perseverance of Mme. and M. Dieulafoy, now enrich the galleries of the Louvre.

No architect can hear the name of Wood mentioned without a warm feeling of gratitude for his long, patient, and persistent efforts in discovering the site of the Artemision, and so showing us what the *columnæ celatæ* of Pliny were, which has joined his name to those of the great discoverers, Belzoni, Layard, Fellowes, Newton, Schliemann, Beulé, M. and Mdme. Dieulafoy, and Mr. Penrose; but as we have no perfect plan to a good scale of what Wood actually found at Ephesus, with the exact site of each fragment, and its actual dimensions, we cannot say whether Fergusson's solution has any foundation, but if it have, the back front of he Temple of Diana at Ephesus would be enneastyle too. Mr. Murray, of the British Museum, had a striking restoration of this famous temple.

The whole arrangement of Greek temples was so simple and restricted that they, or the Romans, not only gave a name to every sort, from the number of columns in their porticos, but made a species from the proportion of their intercolumniations to the column itself. Temples were certainly called by the Romans pycnostyle, = thick-set, when the space was equal to one and a half times the diameter of the columns, and the bulk of the Greek Doric temples did not vary much from this.

Systyle, or close set, when equal to two diameters; diastyle, or open set, when the space equalled three diameters; araeostyle, or wide set, four diameters; and Vitruvius tells us this was only used when the architraves were of wood. That which was most approved, according to Vitruvius, was the eustyle, or well set, when the space was equal to two and a quarter diameters; and he instances that of Bacchus at Teos, believed to have been built in Roman times, which is scarcely more than systyle, the intercolumniations being 2·165 diameters. His reasons for this name are absurd: he says, it has not only a beautiful effect, but is convenient from the unobstructed passage it affords to the door of the temple, and the great room allowed for walking round the columns. He thought a temple looked better when slender columns were used, whose height was from eight and a half to ten times their diameter: at the Parthenon the spaces are but one-third more than the lower diameters of the columns; and at Athené Polias at Priene, also supposed to be of Roman times, the spaces are but one and three quarter times the bottom of the columns, and the projection of the plinths, as the order is Ionic, leaves the bases and the "going" practically equal. The doors have, of course, more space if three diameters are left, but this is diastyle and not eustyle; and he tells us, under the head of diastyle, that the architraves frequently fail from their bearings being too long. The actual space for walking round the ambulatory depends on the diameter of the columns.

The name eustyle was doubtless owing to it having been found a safe distance for a marble architrave to carry, proportioned as this was in depth to the diameter of the column.

I must here remind you that the first treatise on architecture that has come down to us is that of Vitruvius, who is supposed to have been born in 80 B.C., and as he mentions many of the Greek treatises on architecture that have all perished, we suppose he had studied them and adopted their method; but this is a pure hypothesis. All the written information we can get about the principles followed in Greek architecture is from him and from a few incidental passages in the Greek writers, who were writing on other subjects.

Vitruvius says he was a practising Roman architect, and consequently we may conclude that he gave us the rules then in force, unless in such cases as he expressly states to the contrary. Professor Ussing has lately published a pamphlet telling us Vitruvius lived in the fourth century and was no architect.

We can deduce principles from the Greek ruins themselves, and we can see if they have any relation to those Vitruvius describes. We can weigh the deductions made by other investigators, and we can use our own reasoning and intelligence to draw deductions from all these sources. Watkiss Lloyd was the great English investigator of Greek proportion, with whose name you are familiar, and M. Aurès is the French investigator, some of whose works are in the British Museum.

There is one consideration we should never allow to be absent from our minds in any of our investigations, and that is that the Greeks possessed the most perfect intellect the world has yet known, that by their contemporaries they were supposed to possess the wisdom of the serpent, and not a little of its subtilty, and that therefore what we ourselves might consider as folly, or a bungle, is less likely to have been perpetrated by them.

Plutarch tells us that, when Themistocles was brought before Xerxes after he had given himself up to that monarch, a Persian commander named Roxanes whispered to him, "Thou subtle Greek serpent, the King's good genius has brought thee hither."

One great advantage of studying the Classics, even if we became but poor scholars, is the mental training we get by it; we must think and reason, however bad may be our school-

masters, for we know that the writers meant something, and we have to find out their meaning ; and it makes us less like the beasts that perish, by making us acquainted with past times.

The study of Greek architecture, in like manner, has the same indirect advantages, as well as other direct ones.

Charles Garnier makes the following eloquent appeals in his book, "A Travers les Arts," in favour of the study of Greek architecture and of measuring and restoring ancient ruins.

"Whatever be the future personality that may proceed from the architect, the study of Greek architecture should make a part of his first education ; it will show him with what simplicity of means great effects are sometimes produced, it will point out to him the laws of proportion and of opposition—the fundamental laws of the beautiful in the Arts ; but this study, completely æsthetic, will never teach him to make a copy. Greek is admired, but it ought not to be reproduced. It raises the intellect, it points out the way, but it is not to be copied."

Speaking, too, of the study and measurement of ancient ruins and their restoration, he says :—"A thousand voices say, 'What use is it?' Why, churlish and unjust souls, it is useful to the history ; to the palpitating life of the Arts ; it serves to compare the past with the present ; it serves above all things, for that is its end, the artist who has worked at it! Do you believe that the time he has passed in measuring these fragments, in cross-questioning these remains, in giving them their place and their employment—do you believe that this time has been wasted by the artist? He has familiarised himself with the primitive notions of art and construction ; he has lived the life of other times ; he has brought together the history of men and the history of stones ; he has learned to study, to compare, to reason, which he must do later on when he builds for you ; he has, in short, learned the alphabet of architecture ; whatever may be his ideas in the future, he will know how to express them.

If his colleagues have already done similar work, is that a reason why he should not do it too? If my college neighbour has translated Virgil or Cicero, is that a reason why I should not translate them in my turn? Does one man's education give education to another? Do not laugh, then, at these ignorant attacks : it is noble self-denial to employ one's youth in studying one's art, with the hope of becoming later a master in one's turn."

In Bacon's "Essays on Studies," he remarks:—"Read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider," and this is especially applicable to Greek architecture.

To resume, Vitruvius shows us how the proportioning was effected when the eustyle was used. He says :—(Lib. iii., cap. 3) "The extent of the front being given, it is if tetrastyle to be divided into $11\frac{1}{2}$ parts, not including the projection of the bases and plinths ; if hexastyle into 18, if octostyle into $24\frac{1}{2}$ parts ; one of these parts, whether it be tetrastyle, hexastyle, or octastyle may be taken, and it will be the module ; the thickness of the columns will be one of these modules." This is a very simple arithmetical problem for us, but possibly in those days arithmetic was not so common an acquisition, for to take the octostyle we have

6 spaces	at	$2\frac{1}{4} = 13\frac{1}{2}$
1 „	at	$3 = 3$
8 columns	at	$1 = 8$
		$24\frac{1}{2}$

Vitruvius goes on to tell us how the diameters of the columns are to be got when the height and not the width is given ; he says :—"In systyle let the height be divided into $9\frac{1}{2}$ parts, one of which is the diameter of the column ; in pycnostyle one tenth, in eustyle and diastyle $8\frac{1}{2}$ parts." He tells us that columns at the angles must, on account of the unobstructed play of air round them, be one-fiftieth part of a diameter thicker than the rest. In the Parthenon the angle columns are about one-forty-third part larger, and there the intercolumniation is narrower at the angles in the proportion of about 23 to 32, so as to get the metopes nearly alike. He goes on to say the diminution of columns from the base to the neck should be one-sixth for columns under 15 ft. high, from 15 ft. to 20 ft. two-thirteenths, from 20 ft. to 30 ft. one-seventh, from 30 ft. to 40 ft. two-fifteenths, from 40 ft. to 50 ft. one-eight, and for greater heights in proportion ; and he also tells us that, though the bulk of the columns are to be set upright, in those at the angles and flanks the sloping faces of the inner faces of the columns are to be parallel to the upright face of the naos.

The pediment was commonly called fastigium in Latin, though Vitruvius mostly used fastigium for a gable, and tympanum for a pediment. The pediment was only permitted by the Romans to be used as an ornament to the temples of the Gods until the time of Julius Cæsar, when the Senate ordered one to be put to his house, as described by Plutarch. Vitruvius tells us the height of the pediment is to be equal to one-ninth part of the extent of the corona measured from one extremity of its cymatium to the other.

The corona is the main dripstone of the cornice, and the cymatium is its crowning member, and not the crowning member of the inclined parts of the pediment, which was called sima.

"If the temple be broader than 20 ft., two columns are interposed between the two antæ, to separate the pteroma from the pronaos. . . . . If the width be greater than 40 ft., columns opposite to those which are between the antæ, are placed towards the inner part of the same height as those in front ; but their thickness is to be diminished as follows :—If those in front are an eighth part of their height in thickness, these are to be one-ninth ; and if the former are a ninth or a tenth, the latter are to be proportionately diminished, for where the air does not play round them the diminution thus made will not be perceived. Lest, however, they should appear slenderer, when the flutes of the external columns be twenty-four in number, these may have twenty-eight, or even thirty-two. Thus what is taken from the absolute mass of the shaft will be imperceptibly aided by the number of the flutes, and though of different thicknesses, they will have the appearance of being equal. This arises from the eye embracing a greater number of surfaces, and thence producing on the mind the effect of a larger body. For if two columns equally thick, one of them without flutes and the other fluted, are measured round with lines, and the line is passed over the flutes, and their fillets, though the columns are of equal thickness, the lines which girt them will not be equal, for that which passes over the fillets and flutes will, of course, be the longest. This being the case, it is not improper in confined and enclosed situations to make the columns of slenderer proportions, when we have the regulation of the flutes to assist us."

This passage is not very clear, but I think by "pteroma" he there means the two side passages of the pronaos.

"If there be nothing to prevent it, and the use of the edifice allow it, the temples of the immortal gods should have such an aspect that the statue in the cell may have its face towards the west, so that those who enter to sacrifice, or to make offerings, may have their faces to the east as well as to the statue in the temple" (generally speaking, the fronts of temples are to the east). "Thus suppliants and those performing their vows seem to have the temple, the east, and the deity, as it were, looking on them at the same moment. Hence all altars of the gods should be placed towards the east ; but if the nature of the place do not permit this, the temple is to be turned as much as possible, so that the greater part of the city may be seen from it. Moreover, if temples be built on the banks of a river, as those in Egpyt, on the Nile, they should face the river. So, also, if temples of the gods be erected on the roadside, they should be placed in such a manner that those passing by may look towards them, and make their obeisance."

The Temple of Apollo Epicurius lies north and south, with the entrance facing the north, and the statue of the god in the chamber behind the naos faced the east.

I think I have now given you the main features of the Greek structure, reserving the parts for subsequent lectures, and I have done so to show that amongst the ancients the whole structure was arranged in those definite proportions that experience had taught them would look well.

The late Professor A. De Morgan had an aphorism that "rules were excellent things for those who could do without them," and this is quite as true of architecture as of algebra.

It is, I believe, undoubtedly the case that architecture in all great epochs of building had rules, not only for the proportioning of the parts and the fronts, but also for proportioning the whole building. Cæsare Cæsariano tells us that it had been the custom before his time to arrange the plan, elevations, and sections into definite proportions by means of circles, squares, or triangles, and calls it the German method, and shows us how Milan Cathedral had so been set out.

When there was much work to be done rapidly, there was no time to fumble after the right proportions. The architects got out the general proportions by these rules, and altered them, if they were geniuses, to suit their particular cases, wants, and tastes.

I have had plans of most of the Greek buildings and ruins that remain drawn out to one scale to show their variety in size, and their comparative uniformity of arrangement.

In studying and practising architecture, besides native genius, which no one can give himself, the most important thing is to use one's brains. When we look at the plan of a building, it ought to suggest to us why it was so made, not only for its direct purpose and for its appearance, but for the peculiarities of its construction ; and if we want to improve our faculties as architects, we should never leave off considering a plan so set before us, until we have cleared up all the doubtful points to our own satisfaction ; we can never tell that we may not have that very problem to solve, and if we never have, we shall not on that account have lost our labour.

All great men have felt that to let their faculties slumber was the surest way to ruin them. The great financier that Napoleon I. locked up in a dark cell felt this, and got a paper full of pins, counted them carefully, scattered them in his cell, and never left searching till he had found the last one. A civil engineer I have often travelled with on long railway journeys always carried a book of acrostics in his pocket, and when he had rested his mind sufficiently with conversation or a novel he kept his brain at work by solving acrostics from the book ; and the great Mr. Sponge used to keep his faculties from rusting by calculating the cross cab fares from Mogg's Guide.

You see before you a plan of the Temple of Apollo Epicurius at Bassæ. It has received the attention of the late Professors Cockerell and Donaldson, and that of Fergusson, but the cause of its constructive peculiarity seems to have struck none of them. Why did Ictinus, for it was no less a person than the architect of the Parthenon who is said to have built it, attach the columns to the walls of the Cella? And why did he join the end ones diagonally?

It seems obvious to me that it was to resist some thrust. Fergusson had a most acute mind, knew most of the buildings of the world, but he was not an architect, besides he had a passion for timber roofs. He bitterly complained of your late Professor, the lamented G. E. Street, for putting an incombustible roof over the hall of the new Law Courts. He tells us this Temple roof was doubtless carried on timbers ; but I think I may say with the utmost confidence it was not. It was a sloping roof of marble, hipped at the south end, and the marble panelling of this part was carried on the hips because the chamber of the god was behind it, so that the architect could get no abutment there. What does Pausanias say? "In it there is a place called Bassæ, and a Temple of Apollo the helper, the roof of which is of stone. This temple surpasses all the temples in Peloponessus except that which is in Tegea, for the beauty of the stone from which the roof is built and the symmetry of its construction." (Lib. 8, Cap. 41, Arcadies). And Pausanias generally used the word stone when he means marble ; as Pope does,

"That live-long wig, which Gorgon's self might own,
Eternal buckle takes in Parian stone."

(Moral Essays, Epistle 3, line 295.)

This passage of Pausanias has probably been quoted hundreds of times, but so convinced were the architects and critics that the Greeks only used timber for their roofs, that neither the particular mention of the marble roof, nor the peculiar construction of the temple could remove their prejudices nor allow them to use their reasoning powers on the subject. Professor Donaldson, curiously enough, states : "In no single edifice of the ancient Greeks, the remains of which have been hitherto examined, are to be found so many varieties of lacunaria as in this temple." But though he quotes the passage from Pausanias, he never mentions the cell, but denotes the different patterns he found to the porticoes, pronaos, peristyle

opisthodomos, and the space behind the Corinthian column.

Fergusson, in his "Parthenon" (page 80), also quotes Pausanias about the stone roof, and says, "There would be no constructive difficulty involved in this suggestion; these rafters are only 8 ft. in length, and there were roofing stones found in the lacunaria, both of the pronaos and posticum which exceed 12 ft." It is extremely improbable, however, that the Greeks should have employed stone for so essentially a wooden form of construction; and, if they had, it is almost impossible that some fragment should not have been found on the floor of the temple among the ruins."

So that, in spite of the extraordinary number and patterns of the fragments, in spite of the testimony of the eye-witness, in spite of the constructive peculiarity which purely points to thrust, nothing but wood would serve his turn; and yet a little further study of Pausanias might have, perhaps, altered his opinions, for in describing Megalopolis Pausanias says (Arcadies, Lib. 8, Cap 30): "Near this porch is the Temple of Hermes Acacesius, of which nothing but the stone roof remains." I presume Pausanias did not mean that it was, like Mahomet's tomb, hung up in the air, but that all the columns and slabs had gone, and nothing remained but the walls and roof. My experience of ruins is that if there is timber it will be taken, for, if it is good for nothing else, it is good for fuel; but, as they could not burn the stone roof, they let it stand.

ROYAL INSTITUTE OF BRITISH ARCHITECTS:

PUBLIC BATHS AND WASH-HOUSES.

AN ordinary meeting of the Royal Institute of British Architects was held on Monday evening, Professor Aitchison, R.A., presiding.

Royal Gold Medallist.

The Secretary (Mr. W. J. Locke), announced that the Council had decided to nominate Mr. G. F. Bodley as the Royal Gold Medallist for 1899.

The Chairman remarked that they were unanimous in welcoming such an admirable architect and so excellent a man as Mr. Bodley as the Gold Medallist of the year. The paper of the evening, in which public baths and wash-houses would be dealt with, was by Mr. A. Hessell Tiltman. That gentleman was, however, suffering from deafness, and the paper would be read by the Secretary.

Mr. Locke then read the paper, which opened with an expression of the author's personal views upon the ordinances which should govern the arrangement of baths and wash-houses in the future, and their influence upon the arrangement and details of their various departments. The Baths and Washhouses Act, 1846, was passed "to encourage the establishment of public baths and washhouses." Under this, and amending Acts, a large number of these establishments had been erected. The Municipal duty, however, of providing facilities for the cleansing of the bodies and linen of the poor had not been adequately performed. Statistics showed that only a small proportion of the class for which these establishments were chiefly intended availed themselves of the opportunities offered. The reasons for this partial failure the author considered were—first, that the initial distribution and classification of the establishments were frequently at fault; secondly, sufficient effort was not made to educate the masses as to the necessity and benefits of the bathing habit. The bathing community to be catered for consisted of the middle-class, the working-class, and the very poor. A great initial blunder was committed in associating these, in large proportions, for all purposes of swimming, bathing, and washing in almost every establishment. The remedy lay in the practical adoption of some system of central and branch establishments, classified and distributed to suit the special needs of each district. Ablutionary baths and public wash-houses should be decentralised and located at much more frequent intervals throughout those districts requiring them, forming a series of branch establishments; whilst swimming baths should constitute centralised establishments at one or more points, equally dividing up the whole district. The author then enumerated the requirements of the suggested establishments. The central establishment should be the chief and most attractive. The branch establishments should consist of two types, (1) baths and wash-houses; (2) people's baths. Either type could be put upon the site of from two to four *small* houses in a by-street, which would be neither costly nor difficult to acquire. In extending the provision of baths and wash-houses the authorities should consider the advisability of doing so in the direction of branch rather than central establishments. The author had visited and inspected a very large number of baths and washhouses throughout the United Kingdom, and in France, Belgium, Germany, Austria, and Hungary. In Germany he had found much to admire in the arrangement and administration of those institutions by the State, and the true spirit and intention of the Baths and Wash-houses Acts would be much better carried out if part of the German system were adopted. A committee of medical and other experts in New York, after careful investigation, had reported their preference for the arrangement and administration of the new form of German and Austrian "People's Baths." The distinguishing features and hygienic advantages having been fully explained, the author went on to describe the plan and arrangement of each of the three classes of typical establishments advocated by him. The Central Establishment site should have a superficial area of from 30,000 to 40,000 sq. ft., be in a prominent position, and easily accessible from all parts of the town or parish. It should admit of the perfect drainage of all portions of the establishment without necessitating an expensive treatment of levels of the building generally. Much saving may be effected by having only a small frontage towards the main thoroughfare. A good site may often thus be secured, carrying with it sometimes sufficient frontages to back streets, where minor entrances may be provided. In baths carried out for the Islington Vestry the author had adapted the quadrangular system to such a site as that described with excellent results. The water supply must be abundant, pure, and soft. It should be sufficient to meet the largest demand and include a storage for some 15,000 to 20,000 gallons. Ponds of very large size are not advisable. It is better to increase their number rather than their dimensions when the latter exceeds 90 ft. by 30 ft. Five is a useful number for central establishments; two for each of the sexes, and a fifth or small pond to be used alternately for both sexes, principally as a teaching pond. In England swimming baths were usually closed during six months of the year, but with adequate warning and other arrangements—as in Germany, where, though much colder, swimming baths were open all the year round—swimming clubs would gladly use them throughout the winter months. The arrangement of one of the swimming baths during the winter months for public entertainment purposes was next considered, and the best means of meeting the County Council requirements in the matter of exits, &c. Taking into account costly sites, the extra space secured, the advantage to exterior architectural grouping, the author preferred to distribute the baths between the ground and first floors, and if proper lighting can be obtained, the basement as well. Much accommodation is lost, and convenience sacrificed by keeping all the slipper baths upon one floor. The location of hot-air baths, laundry, boiler-house, and engine-rooms, apartments for superintendent and engineer, &c., having been indicated, the author went on to deal with the details affecting the various departments, viz., swimming baths for both sexes, douche or cleaning-rooms, slipper and rain-douche baths, hot-air baths, the establishment working department, boiler-house, engine-room, accumulator-room, receiving-room, wash-house, drying-room, folding and distributing storerooms, mess-room, engineers' workshop, and the administrative department.

A defect requiring correction in English swimming-baths was the insufficiency of dressing-box accommodation in proportion to the superficial area of pond surface. The almost universal arrangement of placing the dressing-boxes down two sides, and possibly one end of the hall, must be improved upon. This might be done by adopting the Continental method of placing an equal proportion of the dressing-boxes or places upon the gallery floor, or by arranging them in a series of transeptal bays upon one or both sides of the bath. The pond should be rectangular in shape, and in the proportion generally of length to width as three to one. Steps to the water should be of wood and made removable. An open self-draining channel, close to the top of the pond and running continuously round it, serves as a scum-overflow and spitting-trough; and a suitable height above the water-line an iron or copper safety rail should run all round the pond for the use of tired swimmers. At the shallow end a portion of this rail is usually converted into a spray pipe, extending the whole width of the pond. By raising or depressing the direction of the perforations in this, a useful and pleasant means of freshening and clearing the top surface of the water is obtained. Further points considered in this connexion were the depth and temperature of the water, gangways round the ponds, flooring materials, dressing-boxes and their fittings. An important feature of the swimming bath should be the douche or cleansing room. This is almost unknown in this country in connexion with swimming baths, but it is a universal provision of the German baths, and used by every bather as a matter of necessary routine, it being understood that, before entering the swimming pone, he should, out of consideration for his fellow bathers, undergo a thorough cleansing process.

Hot-air baths should be upon the lines of the improved form of the Anglicised Turkish bath, consisting of three rooms, viz., the Tepidarium, 140 deg. Fahr.; the Calidarium, 180 deg.; and the Laconicum, 250 deg.; together with a combined cooling and dressing-room, and a shampooing and douche-room. For the second-class hot-air baths the author recommended the system suggested in Metcalfe's "Sanitas Sanitatum et Omnia Sanitas," which consists of a combination of hot-air rooms of the Turkish bath with a system of warmed lavatories in lieu of the shampooing process and plunge bath. This modification of the Turkish bath, for ordinary purposes of ablution, would be perfectly effective, less provocative of colds, and more economical than the ordinary warm slipper bath.

In considering the second part of his subject, "Public Washhouses," the author said that their present arrangement required complete overhauling. Full details of a small installation were given as an indication of the line modification should take. The following rooms were described and illustrated:—Public wash-houses, mangling-room, waiting-hall, cloak and bonnet room, crèche, ticket-office.

Reverting to bathing establishments, the author explained that the smaller type of his branch establishments—viz., people's baths—was intended to meet, in the cheapest and simplest manner, the needs of the very poor for cleansing facilities. It consisted of very small establishments of rain douche-baths, built at very frequent intervals in the poor and populous districts, after the manner of the Germans and Austrians. These establishments could be made so small and compact as to permit of their erection under our streets in a manner similar to our underground lavatories and conveniencies.

Finally, the author touched upon construction and architectural treatment. Construction should be of such a character as to resist the action of water in every form, whether from carelessness, or from the necessities of frequent cleansing. It should be easily kept clean, free from vermin, and especially so with respect to the transfer of contagious matter. As to external architecture the design of the building should clearly express its purpose, quite apart from all questions of style. It should appear exactly what it is, and not ape the dignity and expression of the modern town hall. In the treatment of the natural outcome of the plans there are infinite opportunities for original and distinctive treatment. The paper was illustrated by a large collection of plans of baths in England and on the Continent, including the Kennington-road baths (of which photographs of the interior were shown), Hornsey-road baths, Tibberton-square baths; river and public baths at Hamburg, and "People's Baths" at Hamburg and Vienna.

Mr. W. Emerson, in moving a vote of thanks to Mr. Hessell Tiltman, said there was one point he would have liked to have heard more about—that was the method of constructing large swimming baths.

Mr. H. L. Florence, in seconding the vote of thanks, remarked that if there was any hesitation to criticise the paper it was because it was so full of information that they were unable to

master their points. For himself, however, he did not quite understand the arrangement of the rain douches. It seemed to him that if they were to be introduced they would involve a revolution in the baths as they now existed. The dressing-boxes should be in direct communication with the douches, whereas, as the baths were at present constructed, they were in direct communication with the swimming baths. Without dressing-boxes close to the douches there would be no guarantee that bathers would take the douches before they entered the bath. To introduce dressing-boxes next to the douches would necessarily involve the provision of more space. He had no doubt the introduction of douches would be of great advantage to the populace if the latter could be induced to take kindly to such a novelty. He scarcely felt inclined to agree with Mr. Tiltman in advocating the laying of York paving for the floor of the landings around the baths. In his experience he had always found slate a very much more pleasant material, and more easily kept clean.

Mr. A. T. Bolton remarked that the gentleman who had just spoken was the architect of one of the oldest baths in London—a bath, too, that had proved self-supporting. This latter fact arose, he considered, from the circumstance of the adequate size of a well patronised first class swimming bath. Mr. Tiltman had deprecated the architecture of swimming baths being designed to suggest that it was a Town Hall. It happens, however, sometimes that the baths have to do duty as Town Hall. In the West End parish with which he was acquainted the baths were practically the Town Hall, and their use in the winter for entertainments constituted one of the difficulties of management. Many superintendents would be only too glad to have baths used only for bathing. Mr. Tiltman, too, had deprecated dressing boxes in the gallery because he conceived that the County Council would not approve of the use of staircases for bathers to ascend to them. In the particular baths he had referred to this was one of the points that the County Council did not object to, although they were very excessive in their requirements when application was made for the building to be licensed for music and dancing. Mr. Tiltman incidentally mentioned the excessive noise arising from a swimming bath, but did not point out that this arose from the large amount of glass in the roof. Glass was a very bad material from an acoustic point of view, every splash creating a noise which was not always pleasant. He suggested that if the glass area was restricted, or confined to a cove, there would, he thought, be very much less noise. He considered that the Westminster Baths provided excellent fittings, though the water shoot was a perfect terror to bathers. It was on account of this objection that it was not introduced into a bath that he knew of. In the same way the authorities did not approve of another feature—the sprinkler from the centre of the roof, which had the effect, when used, of cooling the atmosphere. Swimmers seemed to be very sensitive in regard to this sprinkler, and many objected to it. In the baths he was referring to there was a large waiting-room behind the front hall, which had the effect of putting the first class bath nearly 50 ft. back from the street. This was not used, and was now converted into a vestibule. Some baths were finding it a great economy to have only one ticket box approach for either side. Sometimes they found a distinct ladies' entrance which was disused on account of the saving that could be effected. He thought the provision of a refreshment room might be of considerable convenience to the bathers, and profit to the management.

Mr. A. Saxon Snell said that no one who had had the privilege of going over the new swimming baths at Shoreditch could fail to be struck with the great strides that were being made towards the ideal; and they could not but feel glad that at last imagination was beginning to get hold even of their vestries and municipalities. When our rulers and clients were beginning to "dream dreams" it was good for the architects. With regard to small bathing establishments, he thought economy would be effected if used on alternate days by the sexes. This could be done very easily, for women, as a rule, preferred the morning for bathing, and men the evening. In one borough where he was building baths, it was proposed to erect three or four small establishments, spreading the attendants over them as required. Mr. Tiltman's description of the shower or rain douche bath was very interesting, and would, no doubt, be followed by an increase in their numbers in London, because they could be made so cheaply. He had some idea that the system had been introduced somewhere in the North of England. He thought it was done by a manufacturer for his workmen, who found that such baths could be built and maintained at a very small cost. With regard to entrances he was inclined to go one step further than Mr. Bolton and altogether abolish separate entrances for each sex. They were a nuisance in planning and a great expense in administration. Why should it be necessary to have a separate entrance for women when every railway station in the kingdom only possessed one entrance for the two sexes? They were told that women would have reason to object to the language used by lower class men. To that he would reply, that they had to face the same difficulty in the railway station and the train. With regard to the maximum size of a bath he regarded 100 ft. by 35 ft. as a reasonable size—100 ft. being a very good racing length. The placing of slipper baths on the first floor was a very practical arrangement, but he did not agree that they should be placed on more than one floor, because the management would be at greater expense in the matter of attendants. He was surprised to hear Mr. Tiltman object to the internal angles of the swimming bath being rounded, unless he referred to angles of large radius, to the interference of racing, and as to dressing boxes he preferred woodwork and doors, because the latter ensured more privacy. As to the objection that water deteriorated the wood, he would remind them that there were now on the market paints that rendered wood absolutely impervious to wet, and when the necessity for cleaning arose the hose could be turned upon the woodwork without injury to it.

The Chairman, in bringing the discussion to a close, said he hoped most ardently that the slipper-baths and all other such abominations would be done away with as soon as possible. The one great purpose of ablutions was cleanliness. The prevalent system seemed to be for bathers to wash the dirt off their bodies and then wash themselves in it. The shower and rain baths, however, would do away with that. Let them all do what was in their power to discourage the old and exploded system. One of the first men connected with the introduction of Turkish baths, Mr. Urquhart, M.P., once declared that there was no sense of cleanliness among Europeans. They should learn the lesson in cleanliness from the East, that the body should be washed with clean water, which, when soiled, should immediately run away.

The vote of thanks was adopted, and Mr. Tiltman made a brief acknowledgment. He expressed regret that his affliction of deafness prevented him from dealing with the criticisms of the speakers or of undertaking to answer questions that evening.

The President announced that the next ordinary meeting would be held on February 20, when papers on "Public Libraries" would be read by Messrs. J. M. Brydon and F. J. Burgoyne.

THE ARCHITECTURAL ASSOCIATION:

STAINED GLASS.

THE usual fortnightly meeting of the Architectural Association was held on Friday, the 3rd inst., in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. G. H. Fellowes-Prynne, President, in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members of the Association:—Messrs. F. J. Palmer, J. H. Taylor, and A. S. Vernon.

The Chairman then called on Mr. Christopher Whall to deliver a lecture on "Stained Glass."

At the outset, the lecturer explained that he came before them without a written paper, a corollary of which would be an unpremeditated discussion. Working, as he did, from eight to ten and sometimes twelve hours a day at stained glass, he had the subject so intimately in his mind that it would be very much his fault if he could not put it before them without much preparation. He found that he could explain processes and first principles more practically and simply when he had his audience before him and was able to get into touch with them. What he proposed, then, was to have a regular work-bench talk.

What did they want to know about stained glass, and why did they want to know about it? They were curious questions to ask, perhaps, but he put them because on the last occasion when he was present at a meeting of the Association, when Mr. H. Wilson read a paper on the "Arts and Crafts,"* a gentleman, Mr. Blashill, whose opinions seemed to have much weight with them, took exception, in the course of the discussion on the paper, to the line and the general drift and conclusions of the lecturer. According to the *Builder*, Mr. Blashill said:—

"He should not like to take the responsibility of suggesting to them that the road they were pursuing, under all the sanctions of the past and the present—the Institute and the Association, for instance—under the sanction of almost every one who had spoken or written on the subject, was the wrong road. To tell them that if they were to follow some trade one in forty would perhaps become an architect, was not very hopeful reasoning. If they were to follow such advice, and were to sacrifice their careers, they would be just as dissatisfied with everybody and everything. What they had heard was the view of the pessimist, and it was partly a constitutional view. It might be the result of the national food, or national pastimes. Architecture was the profession they were all following, and they must make the best they could of it. He did not see why a man was less likely to succeed as an architect than a sculptor or painter. He failed to see the evidence for it, though he saw that their masters were wrong in being driven into copyism so much. But surely, sooner or later, they would evolve something in the shape of invention on their own account, and in his opinion there was no reason for discouragement."

That, he thought, was a rather exaggerated criticism of what was itself, perhaps, rather exaggerated. Although there were certain curiously strong remarks in Mr. Wilson's paper—such as "getting rid of the architect," and so forth—he did not gather that there was anything in Mr. Wilson's attitude as a craftsman (and Mr. Wilson was also an architect and a practical man) incompatible with the ordinary curriculum which they went through in offices under their architect-masters; he understood Mr. Wilson to advocate the adding of practice to theory, not the exclusion of the latter. He (the lecturer) thought that they might do something that night to bring closer together the two points of view which no doubt existed, and that was always his object when addressing an audience on the subject of the arts. It had become a serious question to ask at the outset the reason why, and the degree in which, they should interest themselves in the crafts. He was present that evening to interest them in one of the crafts, and he proposed to show them briefly how it was practised; then, how far it was in their power to gain a practical knowledge of it without "sacrificing their career"—that terrible alternative which had been held up to them—and by that time he hoped they would be sufficiently in touch with one another, and with him, for the remainder of the meeting to take the form of question and answer and explanation.

As to the actual production of a stained glass window, the first thing, and a very agreeable thing, was a letter from a would-be client. That always took one form; the client wished, very properly, for a sketch, and it had to be sent. Suppose the preliminaries settled, the artist, already having in his mind a conception of the work in small, had to turn it into full size, and he therefore made a cartoon. The cartoon should always be made by a craftsman: that was the essential point. It should always be made—and it was almost never made—by a man who was intimately connected with all the processes of stained glass, and had them at his fingers' ends. The reason for that was that when the cartoon came to be translated into glass, the whole thing should have been previously seen mentally in glass by the man who designed it, in order that he might make the best use of the materials and bring out its strong points and its best qualities. A mere draughtsman, a man who had gone from South Kensington to the Royal Academy, and had been through all the training of a draughtsman—necessary and valuable as that was—was not in a position to take up work of that kind. He could make a beautiful drawing, no doubt—and after seven years at the Academy, if he could not, he could not be up to much—but that was not enough; he had not yet got into touch with his material nor realised

* See the *Builder* for November 19, 1898.

that to make a beautiful drawing for a canvas picture was a very different thing from making a drawing which was to be cut up into pieces of glass with ¼-in. black leads between them. Therefore the cartoon should be made by a man who had been trained as a practical stained glass worker. The rule he adopted in his work—and he superintended the actual production of the glass in all its stages—was to make as beautiful drawings as he could and to mark even at this stage the chief working lines: those which tied the rest of the glass together were not shown. He had conceived the lines in his mind from the beginning, for he knew at starting what he was going to do.

The next step was to make an actual working drawing—a tracing of the whole thing, showing the lead lines only, by means of which the whole work of the window was carried out. The glass was laid on the tracing horizontally and cut as desired, but $\frac{1}{16}$ short of the actual size, so as to make allowance for the lead.

The next stage was the painting of the glass. The pieces of most importance—the head, hands, &c.—were laid upon the cartoon horizontally, and traced with the pigment, which consists of metal with some flux. When the pieces were all traced with such outline as the artist intended, the pieces were waxed up on a piece of glass, and the actual painting commenced.

Mr. Whall then gave a practical illustration of the manner in which the brush was used. The pigment was laid on in what was technically known as mat—an even surface very much like the ground in a mezzotint, *i.e.*, the ground being brought as a rule to a perfectly even and smooth consistency, and gradation of light and shade, lights being taken out of it with various tools. There were three ways in which the shading was done. What he was doing then was stipple, by which the glass could be worked in the wet stage up to a very high degree of finish. A very even finish and a very perfect ground could be got in that way, and skilful workers were able to produce beautiful examples at this stage, but the difficulty was to keep the pigment wet long enough. After it was dry and when it no longer yielded to this treatment, most beautiful and finished lights could be taken out of it with other tools.

Before the painting stage was reached, there was a practice which, he thought, was peculiarly his own, and one which, he thought, was very useful, though others might think it unnecessary—that was the making of a sketch to scale, or whatever size they pleased, in the material itself; in glass instead of on paper. He had brought down several sketch models; they were not to show the client, but more to guide him (the lecturer) towards the realisation of the work before undertaking the larger scheme. That gave a lot of trouble and he did not always do it now, although he used to do so, but he always planned out the work roughly.

After the work had been painted on the glass, it had to be fired. The pieces were taken off the plate, the wax chipped away from the edges, and the pieces were then put into the kiln and brought almost to a white heat—at all events to a heat which softened the glass to the extent of letting the pigment into it. That raised the important question of permanency in stained glass work, which was a most important matter, though not strictly an artistic one. He believed that the controversy as to the value of this and that pigment for permanency was a mistake and that the whole question turned upon the very vital point of whether the work was sufficiently fired or not. Some firms of stained glass makers fired high and some fired low. Those who fired high, for the sake of permanency, made allowance for the loss of colour in the kilns, for the colour, when the work was done in this way, fired off. In his own work, which he naturally wished to be permanent, he made such an allowance; his colours were always darker before the work was fired than he intended them to remain. But the loss of colour necessitated a second working, and the work had to be touched up where the colour had become too faint. When that was done, the work was finished, with the exception of the yellow stain—an invention of the fifteenth century largely used and drawn upon ever since for effects in windows. It was hardly necessary for him to tell them that the quality of stained glass did not consist in anything that was put on to the surface, with the exception of the shading. The colour virtue of stained glass came wholly from the glass itself, with this one exception of yellow stain. In the fifteenth century it was discovered that there was a perfectly permanent pigment by which stained glass of any light colour could be brought to a yellow of almost any depth. It was a preparation of silver, and by it one could paint on anything from a primrose to a ruby colour by the action of the fire. That was the last stage of the window before the workman's stage of leading up. It was a good rule to be careful in the use of stain; it might make a window look rather bilious when used too freely.

As to the use of white glass, the pigment with which the stained glass artist shaded was rather a warm colour—a reddish pigment. The most satisfactory of all pigments as a working material was that which approached nearest to the colour of red lead; but it was unsatisfactory as a colour on glass. There were two ways out of the difficulty: one was to use greyer pigments, which were quite as permanent, though less satisfactory because they fired away a great deal; and the other was to use a bluish or greenish glass to neutralise the pigment. There had during the last thirty years been produced a lot of windows the highest lights of which were of a cold green grey. In such windows they lost the beautiful quality of pearly white which was the glory of the late fifteenth century glass. He would rather make any sacrifice almost than give up the use of pure white glass. It was a most essential thing, and it made every colour in a window take its proper place.

After the window was painted and fired it was leaded up. All the pieces were laid down on the bench and they were put together like a child's puzzle. The lead was put round each piece of glass, and kept in its place by nails; each piece of glass being forced well into the lead. As soon as the glass was in position the joints of the lead were soldered off. After that, the only thing was to cement the whole.

There were several practical questions in regard to stained glass which would appeal to his audience as architects. He had not brought any specimens of his own glass, but he was showing several samples of the work of his pupils at the Central School of Arts and Crafts in Regent-street. That school was not a school of theoretical design, and all the specimens he was showing were the work of his pupils. He did not mean to say that the pupils had designed them all, for many of those pupils were too young for that sort of thing yet; but what he meant was that those who previously had been taught merely to paint a thing from the cartoon were required, at the School, to go through a process which, while not at once making them master-craftsmen, would teach them cutting, leading, and painting in stained glass, and give them a sympathetic knowledge of the craft. It was not masters' work, but it could not fail to have a good effect upon pupils. He thought that was very much an answer to the question: How far is it possible for an architect, with so many calls upon his time and with the exigencies of his training, to take up any craft to a useful end.

If it were demanded that an architect should take up a craft so as to become master of it, that would in these days, he thought, be impracticable; but there was a very great deal to be learnt in a short time. The mere touch of the material gave a man a fresh view of work with it. Craft work exercised a vital influence upon the designs of those who had practised it. It was not architects alone who benefited by this craft-knowledge, but those who carried out work according to old traditions; and what he desired was that they should get to know of the craft conditions of materials. Owing to the present system of sub-division of labour, stained glass windows were almost entirely produced by labour so divided that not one of those engaged upon any portion of the work could carry out a finished work in its entirety. It seemed to him that whatever might be the architect's position of director in the matter, it was a good and proper thing that those who actually produced the thing should know how to do the whole of it themselves. That was what they were endeavouring to do in the Central School, *i.e.*, to make them masters of the whole of the subject, so as to be able if need arose to lead up a window, as well as paint it.

In addition to the cartoons and models previously referred to, Mr. Whall showed a portfolio of designs made by his pupils at the Central School—designs for details of stained glass work. What he particularly felt about those who made those designs was that they were fortunate in learning the design in connexion with the craft. This method had had influence on the work and had brought out a good deal of originality.

The Chairman, in opening the discussion, said they had had just the sort of theory-and-practice lecture they wanted now and then—the more they had of them the better. If there was one subject more than another that architects, as a body, really knew very little about, it was, he thought, that of glass painting. Many architects who were supposed to supervise glass painting work in their buildings showed great ignorance of the whole matter, and their supervision was often very detrimental to the work itself. This was simply due to the fact that they had not grasped the craftsman's side of the work. Architects were not altogether to blame because so many glass-painting firms now were merely firms and not craftsmen themselves. Over and over again one found that some men who were able to make good sketches of glass painting were not able to work out the designs satisfactorily in actual glass. Architects, he might say, did wish to study the crafts, but what they lacked was the opportunity of getting into touch with the crafts. That was what the Association was seeking, and he thought that in time they would get what they wanted. It was one of the objects they had in view in seeking for new premises, viz., the opportunity for getting a thorough practical training in the proposed demonstration workshops—not as master craftsmen, as Mr. Whall had said—not of stained glass work only, but of the other trades—masonry, carpentry, &c. They felt the need of being more in touch with those trades than at present, though in stained glass there was so much more that appealed to an architect on artistic grounds than in the more practical trades. Glass painters had different ways of going to work. For instance, one said he would not use stippling on any account—that stippling was to be avoided to the utmost, because the one idea was to get the stain in the glass itself, and to have very little painting in it to do; another glass painter would state that he depended a good deal more upon modelling the painting on the glass; and another, in complete contra-distinction, he thought, to Mr. Whall, preferred to use his light greens instead of pure whites. So well-known a glass painter as Mr. Kempe used his light greens to a greater extent than his whites in some of his recent work. Glass painters seemed to go through certain evolutionary stages in this matter: one practice seemed to grow into another. While he thoroughly appreciated the importance of getting the full value of whites, as Mr. Whall suggested, yet he found it hard to condemn Mr. Kempe and others in their use of light green tones. One valuable suggestion Mr. Whall made was as to working up a small sketch in glass. It would be very useful to the client to have such a sketch of a proposed window, showing the arrangement of the lines and the disposition of the colour, for it would give him a better idea of what the window would look like when finished. As architects, they had a right to complain of bad cementing in glass. The weather often came through the glass on account of this bad cementing.

Mr. Francis Bond said he spoke as an outsider, never having designed a stained-glass window or made one; but he had had an opportunity of seeing more of the really best old glass than many of them, perhaps. He sympathised with Mr. Whall rather than the Chairman as to sickly green glass. In most recently erected windows this abominable green had been substituted for the beautiful pearly white which ought to be used. It was not merely Mr. Kempe, but people who ought to know better. At Mansfield College, Oxford, the windows had been filled with glass from Burne-Jones' cartoons, and the background was an unpleasant green; and at Mr. Sedding's Church of Holy Trinity, Sloane-square, the great window was nearly all green. He could not imagine how this use of green had crept into stained-glass windows. In the very early beginnings of stained glass, in the thirteenth century, a sort of horny white, or pea-soup white, was used; but they kept it to itself, and did not mix it up with ruby, blue, &c., while as time went on they got rid of green altogether, and gave up the grisaille windows as well. We ought to copy fifteenth-century glass rather than go back to the very archaic

stuff produced at the beginning of the thirteenth century. The type of work that gave him the most pleasure was in the windows of the ante-chapel of All Souls, Oxford, or the east window at St. Mary's, at Ross, although the white there was perhaps overdone. It was delightful to see a window nearly all pearly white, and he was extremely sorry that we were having little but greens now. He had the opportunity of seeing lately a large amount of the later glass used in France just before the Renaissance glass came in. He had seen it in abundance both at Rouen and Troyes, and in those windows there was far too much colour. In the fifteenth century in England—not in France—we had pearly white glass, with as little colour as possible; the object appeared to be to get a stained glass window, if possible, without stained glass: with just a little patch, perhaps, of ruby or blue. That was the kind of window he would like to see revived. As far as he knew, the most beautiful windows to be seen were those he had referred to at All Souls' College, Oxford. They were most beautiful in colour and drawing. He thought it was an utter mistake to have whole scenes or views represented in stained glass windows. There was plenty of precedent for it, of course, and at the beginning of the thirteenth century little mosaic figures, about the size of soup plates, were introduced one above the other. They were perfectly illegible, and the whole thing was wrong. To try and get the conditions of canvas painting in stained glass was a mistake.

Mr. Hampden W. Pratt, in proposing a vote of thanks to the lecturer, said that he believed that, so far as architects were concerned, craftwork could be carried too far. It did not appear to be regarded as part of the architect's training or work to make the cartoons for stained glass windows, and it seemed to him to be a little questionable how far a knowledge of the craft was of any service to an architect if he was not going to carry it out in any way; though an architect, in practising in the craft, might, of course, acquire a certain amount of information which might be of use to him in designing any geometrical work. Where a practical knowledge of stained glass was useful to an architect was in the introduction of figure subjects in his buildings, or in a scheme of colour. As far as he understood it, in a craft school, where only elementary work was gone through, a student could not get very far on those lines. For instance, the colour question hardly entered into the teaching he would get in such a school. That was all very well for young fellows who were being brought up to stained glass work, but the training did not appear to go beyond the elementary stage, and did not touch more elaborate work which had to be carried out. One very noticeable point in the cartoons before him, without any painting on them, was the lines which the lead took; it afforded a lesson to architects who might be designing figures for glasswork, which could not be called geometrical figures, but which had some form about them. The leads in a particular cartoon he was looking at followed so much the whole design and treatment of the thing that it suggested that in such designs it ought to be considered that the lines of the figures in windows to be placed in churches and other buildings might, to some extent, counteract the architectural treatment of the window. A tracery window, for instance, was influenced for good or bad by those lines, and therefore, he thought, the architect and stained glass designer and worker should work together so as to produce the best result. He did not think that the training in stained glass work an architect would get in a craft school would be a very great help to him in carrying on his profession, because he would not have much to do with the practical carrying out of the work; but, on the other hand, a practical knowledge of carpentry or masonry, for instance, would be of much advantage to an architect. He would be glad if Mr. Whall could tell them how to obtain that streaky, cloudy effect which was often seen in painted glass. Some lovely effects could be got by the use of it. He would also like to know to what extent Mr. Whall thought it desirable to use glass with an irregular surface. In old examples some good effects were got by its use.

Mr. Francis Hooper, in seconding the vote of thanks, said that the title of Mr. Whall's lecture was "Stained Glass," but they had heard more about painted glass; that might raise the question as to how much painting was desirable. He was not able to admire some of the cartoons made by Mr. Whall's pupils which were before him, and he did not think that some of the designs could be worked out satisfactorily. As to the use of white glass, he believed that in the best period of English stained glass work, two-thirds of the glass was white. White glass seemed to be a rather appropriate glass to use for the background, as most windows were intended for the admission of light. Very beautiful effects could be obtained without painting at all. Many architects had very good ideas as to the possibilities in stained glass, and his belief was that it was not so difficult to find architects who understood stained glass as stained glass artists who properly understood it. In some of the drawings before him the leads were so shown that it would be impossible to carry out the design and he did not think that students should be allowed to work in that unworkmanlike manner.

Mr. Arthur S. Flower said that unfortunately most stained glass windows had to be protected by wire, and he would like to know if Mr. Whall knew of any method of safely dispensing with the wire, which not only spoilt the window but the tracery as well. Was it possible to strengthen the glass, or to put an outer glazing so as to protect the window and do away with the wire? It would be interesting to know how wide the leads of a window could be made. In St. Anselm's Church, Davies-street, the effect of the windows seemed to be due to the width of the lead. He differed from the Chairman on the question of green *v.* white glass. There was some fine fourteenth century glass to be seen at New College, Oxford, which had a full proportion of white. In the church of Holy Trinity at Goodramgate, York, also (which had been shut up, perhaps to save the authorities the trouble of pulling it down), there was some fine white glass to be seen. The green phase, which he hoped was a passing one, seemed to have originated with the Burne-Jones' windows at Oxford. But it was as well to bear in mind one point as to the use of white glass in a church; it was possible to overdo white glass in an east window where the congregation faced it; it was possible to get a glare which was undesirable. Light was wanted in side and clearstory windows, and these windows were often made too dark, while the east window was of dazzling brightness.

Mr. D. F. Fyfe asked Mr. Whall if he could give them any information as to the limitation of colour as applied to stained glass.

Mr. Matt Garbutt said that he felt about the green in Burne-Jones' windows what he felt about the women that that artist had drawn—it would be pretty if it was not so sickly. It should not be forgotten that glass was used for the purpose of allowing light to illuminate the interior of a building, and anything darker than white would limit the transmission of the light. The desirability of securing the widest range of colour consistent with free transmission of light should secure the retention of some actual white. As to painting on glass, most windows which had appeared to him to be really satisfactory would, he had felt, have been satisfactory without any of the painting at all. He would like to ask Mr. Whall how far the tie lines across large masses of one colour and of simple shape were necessary in stained glass windows. As to the general knowledge of crafts that an architect should have, he felt that Vitruvius was theoretically right in saying that an architect ought to know everything about everything; but as it was unfortunately impossible to know everything, they ought to get as near as they could to it. For a man to pretend to superintend a craft about which he knew nothing, was the height of bumptiousness. As Mr. Whall had said, with an amateur knowledge of a material, an architect was likely to do better than without it.

Mr. Geoffry Lucas said that surely the use of white or green glass depended upon whether the principal colour decoration was put on to the walls of a church or in the windows. If the decoration were put upon the walls, a white light was essential. In his opinion it was necessary that an architect should know something of the practical points of stained glass work, for one could not always rely upon instinctive knowledge in such matters. He would like to ask Mr. Whall if, when a stained glass artist got a commission, before he prepared a design he went to see the site of the work? He supposed it was necessary to do that, in order to get the right tone for a window; but perhaps it was not often done—which might account for a good deal.

The Chairman, in putting the vote of thanks to the meeting, said his previous remarks had been misunderstood. He did not advocate strongly the use of green glass. He said that Mr. Whall had taken a very strong view as to white glass, and he thought that there was room for another opinion, especially as such a man as Mr. Kemp and other stained glass artists used green glass effectively. Moreover, colour often looked patchy on a pure white ground. In some of the York churches, and in a good many other buildings, surely green-toned glass had been used satisfactorily. He confessed that his sympathies were in the direction of the use of a delicate green glass. Many architects felt that the Burne-Jones treatment of stained glass was not the proper treatment. He felt that until he went to the Church of St. Philips at Birmingham and saw the window of the Annunciation. That astounded him, for he had never had any idea that such a beautiful picture in glass existed—not that he thought it was the right treatment; it was more of a mosaic treatment, but the result was a dream of beauty and colour. He was much struck with the work he saw at the Central School on a recent visit. Mr. Hooper had somewhat severely criticised some of the specimens of glass and sketches exhibited. But it should be remembered that most of the specimens Mr. Whall had exhibited were merely students' work in various stages.

The vote of thanks having been put to the meeting and heartily agreed to,

Mr. Whall, in reply, said, as to an architect's wish to know about stained glass and his opportunity for learning about it, he thought the opportunity presented itself in technical schools and in visits to workshops—not only to learn about the way of working, and the proper use of glass, but also in all other materials which an architect had anything to do with. He should get into touch as much as possible with all the crafts. It was not for him to say what were the opportunities, but he thought that architects should avail themselves of every opportunity which did present itself. As to what the Chairman said about firms, one must not cast blame anywhere for the condition of any particular art; we were all more or less the victims of a phase of feeling which had preceded us and had taken the form of a great deal of false teaching. What he meant was this: the Gothic revival was to a large extent a theoretical and academic thing, and unfortunately it produced, on a large scale, what he considered was a very defective system of art education—viz., the entire disassociation of design from the crafts, which was embodied in the system known as the South Kensington system. That was changing, fortunately, but they were all the victims of it, and one of the things they were suffering from most was the sub-division of labour in the actual carrying out of craft work, which certainly lowered the quality of much modern work. That system required a strong effort to break through, a certain amount of artistic heroism to try and educate the worker to take up the whole of his craft. If they were able to work their way out of that system, well and good. He was glad that his remarks about white glass had given rise to so many interesting opinions. The Chairman had exaggerated him if he understood him to say that he desired to discard the use of green "whites." That was not so; what he pleaded for was the use of pure white in the highest light of windows. He used green whites very largely himself, but it was a mistake to make green the *key-note* of the windows, for it gave a window a dingy, bilious effect; whereas, a very moderate amount of white would make it pearly and sparkling—it was a matter of discretion how much to use. He had a great admiration for Mr. Kempe's work, and that gentleman used pure white glass to a large extent. As to the present tendency for green, he thought the tide was turning in the opposite direction. Burne-Jones, whose work he greatly admired, used green and white to a large extent. He did not consider the window in Holy Trinity Church, Sloane-square, successful as stained glass—there were curious defects in it from a craftsman's point of view. The window at St. Philip's Church, Birmingham, which the Chairman had referred to, was a glorious inheritance for the nation, and he hoped it would exist for a thousand years. As to Mr. Bond's remarks that it was wrong to introduce whole scenes into a window, that was becoming more and more his view, but he

did not think it advisable to lay down a hard and fast rule; yet if the limitations of the craft were observed, that would sufficiently neutralise any realism, and make it a proper form of decoration. As to Mr. Pratt's remarks, he (the speaker) felt that as an architect directed stained-glass work, he ought to know all about its production. There were all sorts of architects and all sorts of glass painters, and it was a matter of detail how far it was desirable to direct a stained-glass artist or let him alone. As to the stained-glass artist, if he were a craftsman he would instinctively use the lead lines of his window in harmony with the architecture, and would at once perceive that he had not an open field to work in. The more of a craftsman he was, the more he would respect the conditions; he would know his own craft and would respect the architect's. As to streaky or cloudy glass, a great deal of it was the result of age, and it could not be imitated; the surface of the glass became corroded, and gave a beautiful cloudiness which could not and should not be imitated. But there was what was known as streaky glass, which was made streaky partly on purpose, and partly by accident. When glass was made in the pots it was coloured by the mixture of powders—the oxides of various metals—and as the bottom of the pot was reached there was more and more powder, and the glass became more and more streaky. This was a valuable resource to the stained-glass artist, and sometimes the streaking was exceedingly beautiful. He thought it was quite permissible to use such glass, as well as glass with an irregular surface. As to Mr. Hooper's remarks, what that gentleman had been criticising was students' work, which should always be treated with some indulgence. As to stained *v.* painted glass, there were many opinions as to how much glass should be painted. Mr. Prior, who was a great purist in the matter, held that no mat should be put on the glass. Given a particular kind of glass, there was a good deal to be said for that. Mr. Prior had for years been trying to improve the manufacture of the raw material, and with much success, as the examples he (the speaker) was showing would prove. They were a revelation to one who had never been accustomed to anything but the ordinary material. With such glass (which was very costly), and a good deal of time to deal with it, he thought that painting could be dispensed with. To use plain glass only would narrow one's range a good deal, but a slight film of colour was often sufficient to bring glass into harmony. On the other hand, there was a great danger in over-painting. His rule was to keep clear glass for the bright lights. As to leading, there were certain parts which must be leaded: where there were different colours leading had to be employed; but it was a nice point what to do with the parts when they were not compelled to lead. If they leaded up everything, as was done in the thirteenth century, they would have to limit themselves to a very elementary form of glass treatment. In the thirteenth century the eye was even leaded up. The question arose: How and where should they lead? He had found it a good rule to distribute leading fairly over the whole area of the window. As to the use of wire for the protection of windows, he cordially disliked it, but its use was often necessary where boys and stones were found. It was not possible to increase the thickness of the glass, or the substantiality of the lead. In a public school where he had placed a window, a boy recently kicked a football through both wire and window. One might resort to plate glass, and in the great east window at York it had been used. The effect was disagreeable, and in his opinion it was better to use the wire guard, which showed more of the window. The wire was an eyesore from the exterior mainly; there was not much to be seen from the inside where good glass was used.

The Chairman: Copper is the best material to use, I think; it takes a nicer colour.

Mr. Whall, continuing, assented, but said that both zinc and copper got very black. As to the thickness of lead, it could be made as thick as one liked, but the ordinary leads did not run to more than $\frac{1}{2}$ in.; that was wide enough practically. In St. Paul's, Sir W. Richmond had used extraordinary leads with the glass in the windows; but he, the speaker, thought it must be only an experiment. The churches in York were a mine of beautiful stained glass. It was difficult to say much at hat time that would be useful as to his views about colour, but he might say that, supposing he was using blue, he liked to use a large number of blues rather than to get his effect out of one single piece. The magnificent fourteenth century window at Gloucester was treated in that way; there were hardly two pieces of blue alike in it. He did not limit his range of colour at all; if he liked a colour he used it—but it needed discretion to use a wide range of colour. Given a proper, sympathetic treatment of white, they could do almost what they would if they were colourists. There was no particular limitation. As to tie-lines and how far they were necessary, that was a practical craftsman's matter. There were different features in a design, and they had to be leaded. When all that was necessary to get a colour effect had been put in, it would be found that few tie lines were necessary. As to other questions, glass took about ten minutes to fire when it was once in the kiln. Before he concluded his remarks, he wanted to say a word or two as to their position as architects in relation to craft work. He would take a simile from music; no composer was ever educated as composer only. All the great composers had been practical musicians; and in schools of music it was a *sine quâ non* that the learners of theory—those who were ambitious to become composers—should not only take up their own instrument, but also one of the instruments of the orchestra, so as to get in sympathy with the whole. He thought that was a lesson for other artists. If they learnt one craft fairly well they would be more in sympathy with all. He cordially welcomed any members of the Association who wished to see the actual glass (which was for Gloucester Cathedral) of some of the cartoons he had been showing them, to call at Messrs. Lowndes & Drury's, 35, Park-walk, Chelsea, on the 18th and 19th of this month, from 2 to 5 p.m., while any architect who wished to watch the craft of stained glass in actual progress could do so by visiting the Central School of Arts and Crafts, 316, Regent-street, any Tuesday, Wednesday, or Thursday evening between seven and nine.

The Chairman announced that the next meeting will be held on the 17th inst., when Mr. Cole A. Adams will read a paper on "Colour Decoration."

The meeting then terminated.

THE ARCHITECTURAL ASSOCIATION.

FIRST SPRING VISIT: THE CARLTON HOTEL.

ON Saturday, February 4, the Spring visits of the Architectural Association to works in progress commenced with an attendance of about one hundred members at the Carlton Hotel, now being carried out at the corner of the Haymarket and Pall Mall.

This building, which forms part of the block including the recently-erected Her Majesty's Theatre, was commenced under Mr. Phipps, the architect of that building, but on his death the work was undertaken by Mr. L. H. Isaacs and Mr. H. L. Florence, who are now completing it. At the time at which the latter took up the work, the walls were only a little above the ground floor level, and since then the plans have undergone considerable modifications.

Mr. Florence received the visitors and conducted them over the building, pointing out the various features of interest in the construction. The foundations are not more than about 16 ft. below the levels of the streets, and no great difficulty was experienced with their formation. Owing to the shallowness of the sewers in the district some difficulty was experienced in arranging the drainage, but this has been effectually got over, a sump having been provided which can be pumped out if at any time a high tide in the river causes a flood in the sewers.

The plan of the building consists of a simple hollow square. The large central area is surrounded in the main by an outer and inner series of rooms divided by a central communicating corridor, which runs round the whole building. At the ground floor level the central area is to be formed into a very spacious conservatory, roofed in at about the first floor level with an iron and glass roof. Above this roof the area is lined entirely with ivory white glazed bricks between the stone dressings of the windows and the stringcourses. The height of the area from ground floor to parapet is perhaps twice its diameter, and the light seems very satisfactory.

There are nine stories in the building, including the basement, and there are about five hundred rooms, over three hundred being bedrooms. The roof is flat, except that portion facing the Haymarket and Pall Mall, which is steep and covered with slate, but the whole roof is of iron and concrete, including the steep part. The flat is covered with asphalte. The whole construction of the building is fireproof, except as regards joinery, and the walls are plastered with asbestic plaster, which is said to be fireproof, and which is certainly stronger and tougher than ordinary plaster.

A specially noteworthy feature was the first floor over the great restaurant, which has been inserted in a very ingenious way by slinging the new floor up to the heads of the steel columns originally provided for the support of the floor above only. The reason for the insertion of this floor was that more accommodation was required on the first floor and the height of the great saloon was such that this could be done without making the latter too low.

A special feature of the hotel will be the great space allotted to the restaurant on the ground floor, the great *salle à manger* being 130 ft. by 45 ft. The glazed courtyard can also be used for suppers, &c., and two large rooms are provided for private dinners, while a spacious grill-room is placed in the basement.

The bedrooms are arranged in suites, many of which include a bath-room and water-closet, the good execution of the plumbers' work in connexion with which was particularly noticed.

The building at present has not arrived much beyond the carcase stage, and if the Association could be allowed to have a second visit to see the fittings and decoration it would doubtless be esteemed a great advantage. Numerous sheets of drawings showing the decoration about to be carried out by Messrs. Waring, and also the plans and constructive details of the building, were displayed for the visitors' inspection. While the latter were partaking of tea, hospitably provided by the architect, a vote of thanks was proposed by the President of the Association to Mr. Florence for his kindness in allowing the visit, and in conducting the party over the building, and for his hospitality. This was carried with hearty acclamation.

ARCHITECTURAL SOCIETIES.

THE EDINBURGH ARCHITECTURAL SOCIETY.—The opening lecture of the session of this Society was held on the 1st inst., when Mr. A. Lorne Campbell occupied the chair. As the new President, he opened the season's work with some brief remarks, in the course of which he referred to recent successes of members in the R.I.B.A. studentship competitions. Mr. J. Edwin Forbes then read a paper on the "Abbeys of the Stewartry of Kirkcudbright," which was illustrated with limelight views.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—A lecture on "British Plaster Work: its Past and Future," was delivered by Mr. G. P. Bankart, of Leicester, before the Leeds and Yorkshire Architectural Society in their rooms, Park-street, on the 6th inst. The lecturer said that plaster work was an art-craft of very ancient origin. In the fifteenth century, after having apparently lapsed, it came again into practice. Lime of the best quality was chopped up, beaten with sticks, and subjected to three courses of preparation, ending with an admixture of marble dust to get the hardness and whiteness of the original stucco duro. The application of this was so far successful as to be greatly favoured by the Venetians and Mantuans, from whom the practice was handed on, *viâ* France, to England, whose monarch (Henry VIII.) imported workmen for the adornment of his house of Nonsuch, now lost to sight. The Italian art thus introduced into this country soon gave way to a coarser style of work. In the place of figure drawing, an arrangement of panels appeared, with patterns of small area that would repeat with ease. The Fish Room at Audley End was a capital example of this Early English school. Subsequently the size of the subdivisions expanded until it became the habit to divide ceilings into quarters. This ultimately led to the abandonment of the strict geometrical system. In executing the type of plaster work seen at Holyrood and other places, the design was drawn upon the ceiling, the stems and leaves employed being modelled in situ, with the details added as required. A company of gentlemen modellers was formed, who did

much to preserve the best traditions of the art, which about the time of the Restoration acquired a new vitality. Later on the art again declined, texture was lost, and instead of showing individual feeling, plaster craftsmen came to resemble so much machinery made for working purposes. The lecture was illustrated by a large number of photographs and limelight views.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—On the 1st inst. a general meeting of this Institute was held, when Mr. Emanuel Green presided. Mr. F. Peacock, F.S.A., exhibited two Dutch or Flemish tobacco-boxes, and Mr. Hilton, Hon. Treasurer, added to the exhibition twelve other brass and wooden tobacco boxes of very elegant and varied design. Dr. A. C. Fryer contributed a paper on "Christian Symbolism in St. David's Cathedral." He treated in detail the several emblems depicted on the monumental effigies, sculptures, carvings, and fresco paintings, most of which bear the date of the thirteenth and fourteenth centuries. Mr. Walter Cave read a paper on the Saxon crypt discovered in September, 1898, at Sidbury Church, Devon. In making excavations for some heating pipes traces of walling below the Norman foundation of the north wall of the chancel were found, which, being further exposed brought to light the outlines of the Saxon crypt. The crypt is practically a square chamber within the lines of the original Norman chancel with an entrance in the west wall and a flight of steps leading up into the nave. These steps are placed 2 ft. 8 in. north of the central line drawn through the church from east to west, the reason being that the steps leading to the presbytery would probably be placed as nearly central as possible, and, therefore, the steps down to the crypt would have to be on one side. Hence Mr. Cave concludes that before the Norman church was built there existed on the same site a small Saxon church with a nave and narrow presbytery and crypt below, the latter arranged in a manner that differs from all known examples.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—At the fifth meeting of the current session of this Association, held at the rooms in Sackville-street, Piccadilly, on the 1st inst., Dr. Winstone in the chair, Mr. Joseph K. Aston exhibited, through Mr. Blashill, hon. treasurer, a number of objects found in excavating for the foundations of new additions to the Bounty Office, Dean-street, Westminster. The new building fronts on Great Smith-street, and the site is probably on the margin of Thorney Island, on which Westminster Abbey was founded. The objects exhibited included a perfect specimen of a Bellarmine bottle, or "Greybeard," and fragments of English and Dutch pottery, with eighteenth century china; several copper coins of George II. indicate the age of the stratum through which the excavations were carried. Three Nuremberg tokens of the sixteenth century were also found. Amongst numbers of bones of animals that were met with were several skulls of the wild boar and bones of the ox, possibly of the wild ox. Mr. Gould exhibited the rim of a vase found at Chigwell, Essex, interesting as showing the survival of ornaments of the Bronze age. Mr. Earle Way brought for exhibition a collection of Roman pottery from Southwark consisting of Samian and Upchurch ware of the best period, also some small glass bottles and a bone needle, with coins of M. Agrippa, Claudius, and Nero, and a Roman lady's hair pin of bone nicely carved and terminating with a crown. He also submitted a Greek coin of Alexander the Great in fine condition, and a rosary of polished stone beads from Burmah. The Roman remains were found on the site of a pile dwelling near Southwark-street, at the depth of 14 ft. from the surface, the hair pin at the depth of 9 ft.—The paper of the evening was by Mr. C. H. Compton, V.P., and formed the second part of a paper upon the Welsh Marches, read by him on December 7, last, in which the history of the Marches was brought down to the conquest of Wales by Edward I. Since that time the kings of England controlled the Lords Marchers by the exercise of their prerogative which grew from the necessities of government until it developed into a Court of a President and Council of Wales and the Marches, and as such was established by statute in the reign of Henry VIII., when Wales was united to the Kingdom of England. Some writers say that Edward IV. established this court, but a careful examination of the authorities shows that though that was his intention when he sent Prince Edward to Shrewsbury under the guardianship of Earl Rivers and tutelage of the Bishop of Rochester, the latter of whom was deputed President of the Prince's Council, he died without having constituted a Court of the President and Council of Wales and the Marches, such as was confirmed and established by Henry VIII. The jurisdiction of this court and its subsequent history was traced until the abolition of the feudal tenures in the reign of Charles II., and the abolition of the court in the reign of William and Mary.—Before the meeting separated a vote of congratulation to the Mayor and Corporation of Southampton upon the preservation of the Bar Gate was unanimously passed and directed to be transmitted to the Town Clerk by the honorary secretaries.

Illustrations.

WEST DOOR, CHARTRES CATHEDRAL.

THE two drawings which illustrate this celebrated doorway, as a whole, and the detail of the sculpture and ornament on a larger scale, are by Mr. E. Bennett, and are two of the drawings which obtained for their author the medal of merit for the Pugin Studentship. As before remarked, they are in our opinion the finest of all the drawings sent in for the Pugin Studentship, though the total of Mr. J. H. Rutherford's work rightly claimed the first place in the competition.

In regard to the work Mr. Bennett remarks, "The sculpture is of a warm-coloured stone, more plastic than the hard purplish grey stone of the general structure, against which it is detached in charming contrast of colour and shadow."

"BRAHAN," PERTH.

THE illustrated drawings form part of the contract drawings of a house near Perth, for Mr. R. D. Pullar. These drawings were, however, set aside, and the building has been carried out from different plans.

Grange stone was intended to be used for the walls and green Westmoreland slates for the roof. The chief rooms were to have oak floors and panelled walls, and the ceilings of hall and dining-room were to be formed of oak beams. Over the washhouse and servants' hall wing was a billiard-room, 45 ft. 4½ in. long and 22 ft. wide, with daïs at end and barrel-vaulted plaster ceiling.

The drawing was exhibited at last year's Royal Academy.

STUDY FOR A CHURCH IN SOUTH LONDON.

THE drawings here published are preliminary sketches for a new church for a Public School Mission. The site is a small triangular plot of land between the present mission chapel and a large club-house, with only one street frontage. The church is, therefore, planned with two naves converging in a chancel, and is designed to be built in red brick with stone dressings, and plastered inside. The neighbourhood being smoky and squalid, an effect of height and complexity is aimed at in the interior; the details, however, are kept severely simple. As there is no immediate prospect of the church being built, the design has not advanced beyond the initial stage of a first sketch. In execution it would probably be modified in many respects.

CHARLES A. NICHOLSON.

COMPETITIONS.

PUMP-ROOMS, HARROGATE.—The Harrogate Corporation recently invited competitive plans for a new pump-room and alterations to the present structure. Mr. George Corson, architect, of Leeds, who was the assessor, has made his awards as follows:—For new pump-room—(1) 50*l.*, Mr. F. Anderson, London; (2) 30*l.*, Mr. A. A. Gibson, Harrogate; (3) 20*l.*, Messrs. Eade and Johns, Ipswich. For an altered and enlarged building—(1) 30*l.*, Mr. F. Anderson, London; (2) 20*l.*, Mr. W. E. Jenkinson, Cardiff; (3) 10*l.*, Messrs. Hunt and Shield, London.

STUDENT'S COLUMN ARTICLE.—Owing to pressure of other matter in this issue, our Student's Column article on "Architectural Hygiene" is held over until next week.

THE SURVEYORS' INSTITUTION:
DISTRICT AND VESTRY SURVEYORS.

A MEETING of the Surveyors' Institution was held on Monday in the temporary premises, Savoy-street, Victoria Embankment, W.C., Mr. Robert Vigers, President, in the chair.

The minutes of the last meeting having been read and confirmed, and some donations to the library and the library fund having been announced, the hon. secretary read the result of the Students' Preliminary Examination. The list of successful candidates appeared in our last issue.

Mr. E. W. Hudson then resumed the discussion on Mr. W. Weaver's paper on "The London Building Act and the Official Supervision of Buildings."* It was natural, he said, that District Surveyors should feel that they were, to some extent, on their defence, and that their statements should seem to be of an *ex parte* character. He thought it might well be asked: What is the need of so drastic an alteration as that which was proposed? Who was asking for it, and who was to benefit by it? He thought that in attempting to remove certain evils they might fly to others they knew not of. Certain events had clearly been leading up to some alteration in municipal government, and to the introduction of some change for the glorification of the Vestries. By all means let the Vestries be glorified; but who wanted this change in building supervision as an item in that glorification? The public were satisfied with the manner in which the building law of London was carried out, and they would not gain by having one official to do the work at present in the hands of the two officials—the District Surveyor and the Vestry Surveyor. Neither architects nor large builders desired the change, though the speculative builder would probably prefer Mr. Weaver's ideas, as he would be enabled to put the cost of supervision on the shoulders of the ratepayer. But was it fair to take such a burden from the profit-maker and put it upon those who already suffered from the delinquencies of those gentlemen? Where was it possible to get plans passed by one official? Even on building estates belonging to the Office of Works there were the Crown Surveyor, the District Surveyor, and the Vestry Surveyor to deal with. Mr. Hudson then referred to the provincial method in regard to the sanctioning of plans—a method which invariably resulted in serious delay. There was, in his opinion, one and only one anomaly in the system appertaining in London, viz., the non-correspondence of boundaries—the rectification of which was not a great difficuly. From the map just issued by the *Builder*, it would be seen how great was this overlapping. Supposing the change advocated by Mr. Weaver carried out, where could be found the forty or fifty *rara aves* for the new positions? If they were found, as he believed they might be, they would not have time to perform their duties, and the inspection of plans, probably, would be left to deputies. He felt that District Surveyors ought to be retained; that there should be a rectification of boundaries; that the respective offices of the District Surveyor and the Vestry Surveyor should be contiguous, and that matters of joint interest should receive joint approval.

Mr. W. Eve said that he had been reminded, in listening to the discussions which had taken place on Mr. Weaver's paper, of an incident that occurred 1800 years ago at Ephesus. Demetrius and his fellow craftsmen were very much annoyed at the possibility of the goddess Diana being overthrown, though they were candid about it and admitted that if that happened they would have no more shrines of the goddess to make. They were not so much concerned about the goddess as about the shrines. He ventured to suggest that the District Surveyor had rather taken up that position. For two hours Demetrius and his friends had cried out, "Great is Diana of the Ephesians," and for about the same time the District Surveyors had cried out, "Great is the District Surveyor of London." The mistake that had been made by those who attacked Mr. Weaver was in thinking that it was sought to do away with the office of District Surveyor. That was not so; what Mr. Weaver desired was, first of all, that the District Surveyor should be under control, and

* See our issue for December 17 last for a report of the meeting at which the paper was read, and January 14 for a report of the continued discussion.

that conflicts between authorities should be avoided. If District Surveyors were injuriously affected by the change, should it take place, he saw no reason why they should not be compensated. As to the objections raised to the proposed change, he thought that the first objection was a sound one, viz., the delay which occurred in getting plans passed outside the metropolis; but there was no reason why the law should not be changed on that point, and a limit put within which approval or objection should be made. At the present time in London there was a limit as to the approval of or objection to plans for drains, and he did not see why that should not apply to plans for buildings. Another objection was as to the cost, but he did not see why the change would necessarily result in the cost of building supervision falling upon the ratepayers. In West Ham, Eastbourne, and other places, the authorities had power to charge fees as in the Metropolis at present, and those fees would go towards paying the official who performed the duties of the District Surveyor.

Major Isaacs said that for forty-three years he had been Surveyor to the Board of Works for the Holborn District and having been professionally educated in the office of a District Surveyor he felt he was well versed in the duties of both District Surveyors and Vestry Surveyors. The fact that he was Surveyor to the Holborn Board did not prevent him carrying on practice as an architect and surveyor, as he had done during the whole of that time. He generally approved of the conclusions to which Mr. Weaver had arrived. The present system of giving notice to both Vestry and District Surveyors was an absolute waste of time for the public, which should be prevented by the Legislature. The time, also, of the building public was wasted in the "reverse double process" as to depositing plans referred to by Mr. Weaver—a system which was absolutely ridiculous in the opinion of all men of business capacity. There were also other matters in which the two officers were continually overlapping in the discharge of their duties. It was the practice to put in front of a house, under the public footway, the vaults which received coal, &c., and the two officers supervised such work, which was manifestly the work of one man. Major Isaacs mentioned other matters of the same kind, and proceeding, said that the greatest blot on the present system in his opinion was as to the payment of District Surveyors. Could anything more ludicrous be conceived than that the man who was watched by the District Surveyor to see that he did not contravene the law should be approached at the end of the business for a fee which the Legislature had said should be his reward for the trouble he had taken in the matter? It was wrong in principle, and it was degrading to the District Surveyor. In some east end parishes where the speculative builder abounded there was a tendency on the part of that gentleman to haggle with the District Surveyor, and sometimes, where there were a number of houses being erected, the District Surveyor took a little less than his full fee, whilst at other times he lost his fee altogether where the builder proved to be a "bolter." Surely such a state of things should be terminated. As regards dangerous structures, the Local Surveyor was just as capable of dealing with them as the District Surveyor. In the case of public building, however, he agreed with the observations which had been put forward as to the necessity of a skilled architect being in control of those structures. As to the argument that District Surveyors were practically responsible to no one, surely such an anomaly should be discontinued. It seemed incredible that gentlemen receiving in fees 47,000*l.* per annum should be responsible to no one. If that was really the position of affairs, the sooner it was ended the better. There was a great deal in the position and in the duties of District Surveyors that could not raise the office in public estimation, or increase the professional status of those officers, and it would be a good thing for District Surveyors if the proposed change came about. If the change were made, he thought that District Surveyors would, in many instances, have the best chance of succeeding to the position of the new official.

Mr. A. W. Tanner said that as District Surveyors they had not been impeached, but they could not fail to see that there existed a strong opinion that a change should be made in the present system. Speaking of the fees of District Surveyors, he said that there were sixty-five District Surveyors at the present time, and if they were paid by salary he thought the number would have to be doubled. He could not agree with all the deductions of Mr. Weaver, but he agreed with the sentiment which had prompted him to write his paper, viz., that the proposed new municipalities in London should have proper dignity given to them, and proper additions made to their duties.

Mr. A. A. Hudson said that what had to be considered was the interests of London as a whole in regard to the proposed change, and in his opinion district surveyors performed duties which could not be carried out by parish surveyors. It seemed to him that, for the benefit of the whole of London, some central authority should deal with roads, sewers, frontage lines, and open spaces; those matters affected the welfare of the whole community. As far as he could see, the anomalies referred to by Mr. Weaver were very few and not serious; no one had suggested that district surveyors should be abolished on the ground of want of performance of duties. What was wanted in the administration of the Building Act was elasticity, and he thought that powers of dispensation might be given to a central authority somewhat on the lines of the Tribunal of Appeal. He took a great interest in that Tribunal, because it was a pet scheme of his to see technical tribunals established in London, for he felt that they were wanted. Somebody should have a dispensing power in dealing with this very hard Building Act, in order to make it applicable to the great variety of building and conditions which must exist in a great city like London.

Mr. F. Wallen said that under the Building Act of 1844 the streets and sewers were controlled by the central and local authorities and the houses by the District Surveyor, a plain line of demarcation being drawn at the front of the house, and the District Surveyor having the supervision even of the sanitary arrangements of it; but this had been altered by more recent legislation, and it might be desirable to return to the former legislation in that respect. Mr. Weaver's suggestion that the Local Authority could by periodical inspection discover violations of the law was inapplicable because neither the Local Authority nor the District Surveyor has any power to enter upon buildings for that purpose, and he quoted the recent decision of the High Court in the case of the St. Pancras Vestry *v.* The North London Collegiate School for Girls in proof of his statement. The County Council could direct where the office of a district surveyor should be. He did not think the Council had considered the desirability of making a district co-extensive with that of the various local authorities, but he thought it would be a good thing if they did so. There was a fallacy in Mr. Weaver's paper as to the approval of plans; neither the Local Authority nor the District Surveyor had power to require the deposit of plans; all they could do was to insist upon notice being given, but in regard to public buildings there was a by-law of the Council that plans must be deposited. In the case of private buildings the District Surveyor might require to inspect the plans, but he had not the power to approve them; his duty was to visit the buildings continuously and prevent any infringement of the Building Act.

Mr. W. Weaver, in reply, said he felt amply rewarded for any trouble he had taken in the preparation of his paper by the evidence shown during the discussion that he had dealt with a subject of great interest to surveyors. Before dealing with the arguments and statements advanced in opposition to his proposals, he might explain that in the preparation of the paper he had endeavoured carefully to avoid using any words likely to wound the feelings of the district surveyors in the metropolitan area, and he confessed to being considerably surprised and a little pained to find that a paragraph in the paper was thought to be open to be construed in a different sense from that in which he wrote it. He alluded to the observation that "the office of district surveyor was formerly sought, not so much on account of the direct income attaching to it, but for the opportunities afforded for enlarging the private practice of the official." What he had meant to convey was that, as he believed, many persons having no preference for any particular architect would naturally employ the district surveyor, first on account of the responsibility of his official position being a fair guarantee of his integrity and skill, and secondly on account of his thorough knowledge of the Building Act, which enabled him to deal economically with his client's money. He would be sorry if his remarks were misunderstood, and he took this earliest possible opportunity of removing any false impression which his words might have conveyed. About twenty speakers had taken part in the discussion of his paper, and of that number ten were men who filled or had filled the position of district surveyor. In the first place he might point out that many of the speakers' arguments were founded on the erroneous assumption that he proposed to transfer the duties of the present district surveyors to the present parish surveyors, many of whom, it was alleged, were unfitted by training to undertake the duties of the first-named officials. But he had not recommended any such transfer. What he did clearly advocate and recommend was the amalgamation of the two offices; that one competent engineer and surveyor should be appointed in each of the proposed new metropolitan districts to discharge the present dual (and to some extent conflicting) duties now carried out by the two officials. He had, moreover, pointed out the necessity of proper skill and knowledge on the part of the new official, which might be ensured by making the appointment subject to the passing of technical examinations. Very few appointments of town and borough engineers or surveyors were now made without the candidate being subject to such examination, and in view of the extensive growing use of iron and steel in modern building construction, it was a question whether even more importance should not be assigned to the constructional branch of the examination than was afforded even by the qualifying syllabus of the Royal Institute. Apart from legal knowledge, the examinations for district surveyor and for building surveyor were almost identical, and there was nothing requiring the district surveyor to be a skilful architect with a knowledge of styles, architectural decoration, and so forth. As stated in the paper, it appeared to him unreasonable to appoint an architect to the position of district surveyor on account of his architectural skill, the non-user of which was a condition of his employment. It would be very much like employing skilled artists to execute house painting. With reference to another general contention raised by the district surveyors, viz., that their present official independence was preferable, from a public point of view, to service under the control of a council or corporation, he was willing to admit the weight of the argument. On the one hand there was the risk always attendant upon an official whose comfort and advancement—to a large extent of his personal interests—depend on his popularity, rendering him hard of hearing to the strict call of duty; and on the other hand there were a body of officials appointed by the County Council, but not responsible thereto, and carrying out their duties uncontrolled except by judicial authority. No one is over-fond of being supervised, but the best of us were the better for being looked after a little, and even in the case of the district surveyors the supervision of a district authority might prove a healthy stimulus to exertion. Balancing the advantages and disadvantages of the two systems, he was of opinion that supervision under the authority was preferable to the present irresponsible supervision, though he should like the officer of the former to have a right of appeal against unjust treatment, as in the case of poor law officials. In concluding his remarks on the general criticism of the district surveyors, he would point out that as his recommendations proposed the diversion from their coffers of a gross income of about 48,000*l.* per annum, it was not to be expected that as a body they would receive his proposals with favour, and this consideration must not be lost sight of in weighing the arguments. Coming now to some of the special points raised by individual speakers, he found that Mr. Blashill stated that there were only one or two unimportant matters in buildings not covered by the district surveyor's duties. In reply he would point out that the sanitary arrangements and water supply of buildings under the Public Health Act and Metropolis Local Management Acts, with which the district surveyors had no concern, were important features in a building, and that under the district snrveyor and Building Acts a building might he erected which has afterwards to be altered to meet the

requirements of the parish surveyor and the Public Health Act. Only recently, in Kensington, in a row of twelve business premises, of a rental value of from 400*l.* to 500*l.* each, the whole of the ranges of basement water-closets were found to be gross infringements of the latter Act, although not contrary to any provision of the Building Act. A large outlay had to be made in altering them, and the result was only a botched job, whereas if the plans had been submitted to the surveyor before building, they might have been altered, and a much better result attained, probably at less expense. Again, in many instances of large blocks of flats, he had found, when the drainage plans had been submitted, that the provisions as to light and air to water-closets and as to access from living-rooms, &c., had not been complied with, and alterations in the building had to be made to meet these omissions. The question of provision for adequate water supply involved considerable supervision and a knowledge of the supply to the district, and whether there were intermittent or constant pressure. He had recently supervised a block of flats where the supply to the upper stories had to be assured by a pump in the basement worked by an electric motor, and in many cases the Vestry had had to compel the removal of cisterns fixed in most unsanitary positions. With reference to the question raised by Mr. Blashill as to the method of supervision, it could, he thought, be solved by following the practice of the large towns of providing qualified building inspectors, working under the advice and supervision of the chief engineer and surveyor. With regard to dangerous structures, Mr. Blashill stated "that he hardly knew an instance of an accident having happened through any negligence of the district surveyor." He did not allege any negligence; but he thought that, as a rule, the duty of the district surveyor relative to dangerous structures only commenced when his attention was called to them. It was not his duty to perambulate the streets and look for defects. In his own experience at Kensington he could call to mind some half-dozen cases of buildings collapsing, but in none of them could he attribute the slightest negligence to the district surveyor, nearly the whole of the cases being attributable to building too fast or in bad weather. His contention was that the Local Authority which is now vested with power to enforce precautions for the public safety whilst buildings are being *pulled down* should have equal rights while they are being *put up*, and during their existence. In the cases of fees paid to district surveyors in relation to new streets, vaults, and projections, the public was really paying twice, as the duties are also, and must necessarily be, discharged by the parish surveyor. He thought he had generally met Mr. Payne's remarks, but one or two points were raised which had not been specifically dealt with, first as to legal proceedings, and secondly as to private practice. With regard to the first, it was, he thought, very desirable when a case was taken into court that it should be conducted thoroughly, and he feared that in some cases conducted by district surveyors an adverse decision had been given when perhaps legal skill would have scored success, and this adverse decision was afterwards quoted as a precedent. He saw no reason why the County Council legal staff should not conduct the building cases of the District Councils, but he thought it would be better still to invest the present Tribunal of Appeal with power to determine finally all questions arising out of the Building Acts. The Tribunal should, he held, be made a much more influential and important body, armed with full powers to deal with this distinct class of subjects. Under the present system a magistrate, after dealing with the ordinary charges of a police-court, must often give his mind to the solution of questions requiring technical skill which he could not be expected to possess. The question of private practice Mr. Payne and other speakers appeared to regard as very important, while, on the contrary, Mr. Blashill attached little importance to it, or at any rate to the private work arising in the surveyor's district. But he still held to the opinion that it was unwise to allow a public official to practise privately, and he thought the London County Council had acted wisely when they introduced the prohibition. Some of the speakers, including so competent an authority as Mr. Collins, saw no objection to the duties of architect, surveyor, and building surveyor being fulfilled by one individual—perhaps not in London, or more especially in the City. With regard to the observations of more than one speaker as to the impossibility of the amalgamated official being able to give personal attention to the combined duties, he would point out that under the present dual system delegation of work to assistants must of necessity exist, and, given the right man at the head of affairs, no disadvantage to the public need arise therefrom; but, on the other hand, by a skilful and judicious dovetailing of the different duties, effective and economical results were attained by having the various branches of the work controlled and directed by one competent chief. It was said by Mr. E. W. Hudson that builders were perfectly satisfied with the present state of things, and this might possibly be taken as an argument in favour of divided supervision. Mr. Hudson anticipated extreme difficulty in finding suitable men to discharge the amalgamated functions as suggested in the paper, but he did not think there need be more difficulty on this head in London than was experienced in the large provincial towns. He agreed with Mr. Eve that there would be no difficulty, should the proposed change be made, in making it compulsory that assent to or dissent from plans should be stated within a given time, as is the case now with reference to drainage plans, which must be refused within seven days, or otherwise consent is implied. As a district surveyor Mr. A. W. Tanner admitted that there was a public demand and necessity for an alteration in the present system, and alluded to the ignorance on the part of the general public with regard to the individuality of the district surveyor. He could entirely endorse that statement, for he (although a vestry surveyor) continually received letters addressed to the district surveyor calling attention to matters within the sphere of the district surveyor's duties. This was a clear indication of the public impression that the district surveyor at the district town hall was such an official as he had recommended in his paper. The desirability of securing the independence of the supervising official was strongly urged by Mr. A. A. Hudson, who supported his argument by instancing the position of an architect in relation to a building contract, but he (Mr. Weaver) ventured to say that the instance did not greatly help his argument, as every architect was generally very well looked after by his employer, and indeed, in a recent case, a public body had been officially censured for not looking after their architect sufficiently. The elasticity advocated by Mr. Hudson should, he thought, be secured by appeal to the special tribunal in large matters, while in small matters the local surveyor would decide. With regard to the question of fees *versus* salary, he was of opinion that under the present system of building supervision fees were to be preferred to a fixed salary for work varying greatly in quantity, although he agreed with Mr. Wheeler, Q.C., that it was wrong in principle to receive fees from the builders whose work was supervised. Under the change advocated in the paper the chief surveyor would, of course, be paid by fixed salary, and his staff would be increased or reduced to suit the variation in work. Whether fees should be charged to builders or not was also a question of argument, but he thought it mattered little which course was adopted, or whether the fees were covered by the rent or by the rates. No argument had been advanced which had shaken his conviction that the local work of the Metropolis should be vested in the District Councils or Corporations managing the several areas into which so vast a city as London must of necessity be divided; that such local work should include the duty of seeing that safe, properly built, and efficiently sanitated and healthy buildings were erected and maintained in the district, and that able and efficient officers should be appointed by such District Councils or Corporations to discharge the duties connected with such work. As to the conditions of such appointments, various views might fairly be taken, but personally he was of opinion that the appointment and dismissal of the surveyor and engineer of each Council or Corporation should be subject to the approval of the Local Government Board, as was the case at present with respect to medical officers of health and poor law officers. This course would insure the appointment of competent men at proper salaries, and would safeguard the officials against the risk of unjust treatment.

It was announced that the next meeting will be held on the 20th inst., when a paper will be read on "The Management and Valuation of Brickfields."

Country Meeting at Bristol.

It has been decided, on the invitation of the Somerset, Gloucester, and North Wilts Provincial Committee, to hold the next Country Meeting at Bristol, on April 26 and 27. The first day will be devoted to papers and discussions, with a dinner in the evening; the second day to excursions to various places of interest in Bristol and its neighbourhood.

MAGAZINES AND REVIEWS.

THE *Art Journal*, having completed fifty years of consecutive monthly publication this year, is celebrating its jubilee in a very interesting manner, by issuing, during the course of the year, twelve extra numbers consisting of reprints from the early volumes. Here we have the old decorative head piece with the three female figures representing Sculpture, Painting, and Architecture, amid a selection of quasi-classic bric-à-brac, such as was in vogue in those days. We recognise in the first number many illustrations once familiar to us, the style of which speaks of the change in taste and in the manner of engraving since that day. This partial republication forms an interesting standard of comparison. In the regular issue of the *Art Journal* the articles on "The Architecture of the London Clubs" are continued, and the Reform Club, the work of a great architect, affords more excuse for these articles than the illustrations of some other clubs which have appeared in the series. In the same number Mrs. Bruce Clarke commences a series of articles on the fascinating subject, "Jewels, Ancient and Modern."

The *Magazine of Art* has as frontispiece a chromo-lithograph from a study by Millais for his early picture "The Ransom"—said to be a study for the head of a little girl, but looking more like that of a woman. The number includes an article on Mr. Abbey and his work—it seems every one must have articles written about them in their lifetime nowadays; we think the practice tends to insincerity of criticism, as the writer cannot really go freely into the merit of work when the criticism (?) may be read by the artist, who is perhaps a personal friend of the writer. The symposium on the subject "Is Photography among the Fine Arts?" is continued by Herr Knopff, who we are glad to see inclines to the negative view (no pun was intended), and winds up with a salutary quotation to the effect that "photography has every right to be itself without attempting to ape anything else. . . . . It must not sacrifice what ought to be its very essence, its life, its one superiority over every other work done by hand—that is, its literal truth." That is common sense and good criticism, and we commend it to the attention of those photographers who try to be "artistic" by taking blurred photographs. There is an interesting article on a modern Italian painter, Ricciardi Meacci, the illustrations from whose works, however, strike us as mere revived Renaissance, and therefore of doubtful value. "The Van Tromp pictures of Turner," by the Curator of the Holloway College Gallery, deals with a special subject of some interest both from a natural and an artistic point of view.

The *Artist* contains an article, with some illustrations, on the subject of some modern German sculptors, and a series of illustrations of "A Scheme of Design for a Dining-room" by Mr. A. H. Baxter. We do not care much for the general elevations of the walls, but the smaller details are piquant and original.

The *Architectural Review* (Boston), vol. vi., No. 1, contains among its illustrations a very "severe" Greek façade of the Pawtucket Free Public Library—purely scholastic architecture, but at all events very good of its kind; Messrs. Cram, Goodhue, & Ferguson are the architects. The Post Office and Court House, San Francisco, is a piece of official Treasury architecture, broader and simpler in treatment than official architecture generally is in this country, but not first-class. The main article is one by Mr. Blackall on "Good and Bad Colonial Architecture," with a number of small illustrations of buildings, by way of distinguishing between what to admire and what to condemn.

The *Studio* (January 16) devotes considerable space to an article by M. Gabriel Mourey on the works of M. Cottet, whose striking picture,

"Ceux qui s'en vont et celles qui restent," was mentioned in our notes on last year's Salon. He bids fair to fill an important place among the modern French painters of peasant life. "Textile patterns from Suffolk rood screens" is an interesting subject treated by Mr. E. F. Strange, with a good many illustrations of detail from these works. Among the other subjects treated and illustrated are the works of Mr. Thayer, the American painter, and "Modern Lithography in Germany."

In the *Architectural Record* (quarterly) the problem of the American tall building is treated by Mr. Montgomery Schuyler, under the title "The Skyscraper Up to Date," with a number of illustrations of New York tall buildings. Mr. Schuyler seems to think that the Bayard Building, by Mr. Louis H. Sullivan, solves the architectural problem best. Here the piers between the windows are accentuated and continuous right to the top of the building, where they are connected by an arcade, with a frieze with figures of angels above. The angels are all very well, but the treatment with continuous vertical piers is to our thinking rather a warehouse than an apartment-house treatment. In the same number is an illustrated article on the Alcazar, Seville, and one on Palladio and his work by Professor Melani. We fear there is rather a tendency, after the opprobrium cast on the memory of Palladio during the Gothic revival period, to go to the other extreme and raise him again into a "cult," which will be a mistake. Mr. J. B. Robinson continues his suggestive articles on "Principles of Architectural Composition."

The most interesting communication in the *Antiquary* is that of the Rev. W. Falkiner on an Irish Crannog or lake house found beneath what is now dry land but was once a lake—"Lough-a-trim," "The Lake of the elder trees." A section is given of the erection as it once was, the piles on which it rested still existing *in situ*. On the ancient refuse heap, which was reached in excavating, numerous objects were found—bones of oxen, wild-boar jaws with tusks, a whet-stone, part of a grind-stone, bronze pins, several horn hair-combs, &c. The remnant of one of the latter implements is figured.

The *Edinburgh Review* includes a weak article on "Burne-Jones: His Ethics and his Art," which is merely a repetition of the present popular feeling about this artist, in whose work we should say that "ethics" is just the element the painter studiously avoided. The article is not up to the level of some of the art-criticism which has appeared in this review, and is in fact a direct contradiction of the tone of articles which appeared not long since in its pages, so that there seems to be under the present management a lack of continuity and principle.

In the *Quarterly* a short article on "Stained and Painted Windows" is given in the guise of a review of Mr. Day's recent book, of which the writer takes a very favourable view, and from which, to say truth, he seems to have borrowed most of his ideas.

Moring's Quarterly has an essay on the subject of the Tanagra terra-cotta figures, partly with the view of arriving at some definite conclusion as to their meaning and origin. The essay (which is illustrated) is to be continued in future numbers.

The *Contemporary Review* contains an article, by Mr. Shaw-Lefevre, on "London Street Improvements." His opinion on such a subject has no particular weight, except in regard to the financial and what may be called political aspects of the question; but we concur in thinking that what is wanted more imperatively than widening existing streets, is the formation of new and wide streets through districts at present occupied by inferior property; though the process of widening the old ones should be kept in view as every opportunity occurs.

The *Century* contains an article by Mr. F. Courtland Penfield on "Harnessing the Nile," a popular article on the reservoir system. The writer gives full value to the protests which were made against the destruction of Philæ. There is an article by Miss Marie L. Van Vorst on the M. Boutet de Monvel, the French painter, and a short critical estimate (a very fair one) of Opie, accompanying an engraving of one of his pictures.

Harper contains an article on "The Astronomical Outlook, as Related to the Perfection of our Instruments and Methods of Observation," by Mr. C. A. Young. He seems to think there is room to hope for much greater powers in future telescopes than are now available; but then there is always the question of this troublesome atmosphere of ours, and its distorting and obscuring effects, which must increase with every increase of optical magnifying power. The article is worth attention, however.

Scribner is entirely devoid of artistic or scientific contributions except the usual "Field of Art" article, dealing this month with "Æsthetics in our Universities," by Mr. H. R. Marshall, who appears to think that "university teaching in æsthetics is in no respect developed in correspondence with that in other departments of human interest:" a complaint which may surely be echoed in the Old Country.

In the *Revue Générale* M. Arnold Goffin continues his illustrated articles on the history and art of Florence, of which the third number is given in this month's issue.

The *Pall Mall Magazine* gives some illustrations of monuments to naval men, as accompaniments to an article on "Naval Heroes at Westminster Abbey."

The *Gentleman's Magazine* includes an article of some interest, by Mr. Percy Fitzgerald, on "The First Printed Book and its Printers"—to wit, that known as the Mazarin Bible.

We have received also the *Genealogical Magazine*, the *English Illustrated*, *Knowledge*, *Timber* and the *Quarry*, for the current month; and the *Indian Engineer* for December.

SANITARY INSPECTORS' ASSOCIATION:

SIXTEENTH ANNUAL DINNER.

THE annual dinner of this Association was held on Friday last in the Venetian Salon, Holborn Restaurant, when nearly 200 guests sat down, the company including Sir John Hutton, who presided, Sir Douglas Galton, representing the Sanitary Institute, Sir James Crichton Browne, Sir H. Gilzean Reid, Dr. Farquharson, M.P., Mr. Preston, the Master of the Carpenters' Company, Professor Banister Fletcher, Venerable Archdeacon Sinclair, Venerable Archdeacon Stevens, Mr. T. McKinnon Wood, Chairman of the L.C.C., Mr. Russell Spokes, of the L.C.C., Mr. H. Lovegrove, Mr. J. Brydone, Dr. Shirley Murphy, Dr. Lewis Thomas, Dr. Milsom Rhodes, &c. After the President had proposed the loyal toast, Archdeacon Sinclair gave that of the Houses of Parliament.

Dr. Farquharson, in reply, pointed out the difficulty of getting sanitary questions properly considered in the House of Commons. They had very few enlightened sanitarians in the House.

Sir John Hutton then proposed "The Sanitary Inspectors' Association," which, he said, was making satisfactory progress, and was growing in numbers and in experience, but for the complete accomplishment of their aims and the further extension of the Sanitary Inspectors' Association they required from each member a good deal of individual effort. It was disappointing to find that the reasonable claim of the Association to be represented on the new Examination Board for Sanitary Inspectors was still resisted. Why sanitary inspectors should be the only persons excluded from an examining board which would decide upon the qualifications of sanitary inspectors, passed his comprehension. They would certainly not rest satisfied until some sanitary inspector had found a seat at that board. Referring to the precarious tenure of his office by the sanitary inspector, the President pointed out the difference in the status given to the Medical Officer of Health and the other sanitary officers by the Public Health Act. Article 9 provided that until a medical officer died or resigned, or was removed with the consent of the Local Government Board, he shall retain his appointment, but Article 10 did not make any such provision for the sanitary inspector. A change in the law was needed here, which they must set themselves to accomplish. On the question of the remuneration of sanitary inspectors, the President advocated an increase of the minimum salary. A man fit to occupy the position could not be properly paid with a miserable pittance of 70*l.* a year; the minimum ought to be at least 150*l.*, with a right to periodical increases. In conclusion, he referred to the scheme of superannuation, by which the sanitary inspectors desired to make provision for themselves by their own subscriptions. The London County Council had made a similar arrangement at the Blackwall Tunnel, the dangers incurred in the construction of which were of a special character and required a special provision, that could not have been made without a considerable subsidy from the Council.

Mr. T. J. Moss Flower, C.E., the Chairman of the Council of the Association, responded to the toast. Referring to the remarks of the President on the hoped-for increase in their numbers hundreds and thousands, the Chairman said the Association had achieved a good measure of success. If they could not boast of thousands of members, they had something like 700, and there might be hundreds and hundreds more. In their ranks they had not only the sanitary inspectors of London, but some of those from various parts of the United Kingdom. It was an object to be aimed at to have one association for the whole United Kingdom, instead of—as was actually the case—one association in Scotland, another in the North-western district, one in the South-western district, and another in South Wales. To secure this did not seem possible at present, but if they put their shoulders to the wheel they might yet be able to bring about this desirable result. The Chairman then referred to a recent case which had come under his own knowledge that illustrated the evils resulting from the insecurity of the sanitary inspector's tenure of office. An inspector had received a notice from a person who had found that a drain from a neighbour's house ran under the floor of his own house. The inspector ascertained that the house complained of belonged to a friend of the Chairman of his Council. The inspector tactfully wrote a polite letter to, and called upon, the Chairman's friend as well as upon the Chairman himself. The latter declared his intention to back up his friend: he would himself fight the inspector over the matter, and would advise his friend to fight the case too. That man was no longer a sanitary inspector; rather than submit, he resigned his post. "Until we are made responsible only to some central authority," continued the Chairman, "we cannot always do our duty. We want an alteration in the law in many things."

Two members of the Association, who had rendered great services to it, were now called up to receive at the hands of the President testimonials subscribed for by their comrades and illuminated certificates setting forth their services. The first called upon was Mr. G. T. Dee (Westminster Board), the late Chairman of Council, who, said the President, besides charging himself with the direction of the finances of the Association since 1891, had during his year of office almost lived in the lobby of the House of Commons for the purpose of explaining to members of that House the provisions of the Private Bill to provide a scheme of superannuation for sanitary inspectors, which the Association is promoting. The testimonial to Mr. Dee consisted of a timepiece and illuminated address. The second testimonial, a tea service in silver, was presented to Mr. E. Tidman, C.E., the Hon. Secretary of the Association and Editor of the monthly journal. When Mr. Tidman became Hon. Secretary, the membership of the Association was 299; at the present it was 700. The testimonial was the result of subscriptions from every member of the Association. An illuminated address, which accompanied the present, was read, and Mr. Tidman briefly replied.

Sir Douglas Galton proposed the next toast, "Local Government," prefacing his remarks by declaring that with regard to the constitution of the new Examination Board, the Sanitary Institute had never opposed the admission of the sanitary inspectors. They had not been consulted, and therefore were not able to express an opinion. The proposal to admit them would have been welcomed by the Sanitary Institute.

Mr. McKinnon Wood (Chairman, L.C.C.) said he had been much astonished to learn that it was the practice to appoint sanitary inspectors for only a single year. He could only account for that fact by supposing that the distinguished men who formed the Local Government Board were overworked and had not had time to remove the blot. The sanitary inspector ought to be able to command a reasonable security in his appointment. He was doing useful work, and was of service to his country.

Sir Hugh Gilzean Reid said he was glad to have heard, since the visit of the sanitary inspectors to Belgium, that it had added considerably to the knowledge of the sanitary

engineers of Belgium, and that in some instances that knowledge was being reduced to practice.

Mr. Russell Spokes also responded to the toast on behalf of the London County Council, and then that of "Science and Art" was proposed by the Master of the Carpenters' Company, the first portion of the toast being responded to by Sir James Crichton Browne, and the second by Professor Banister Fletcher.

Professor Banister Fletcher, in responding, disclaimed, as a member of the Examining Board and on behalf of the body he represented, any opposition to the admission of sanitary inspectors. They had had nothing to do with the exclusion of any other body. The sanitary inspectors had made a great advance, and he hoped the House would soon come to their help to make their position what it ought to be, and give them security of tenure.

The Rev. J. W. Horsley proposed the toast of "The President."

Sir John Hutton having briefly responded to the toast, Dr. Milsom Rhodes (hon. member), proposed "The Visitors," to which the Ven. Archdeacon Stevens replied; and Mr. H. Lovegrove proposed "The Press," to which the representative of the *Builder* was called upon to respond.

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—The first ordinary meeting of the Society of Engineers for the present year was held on Monday evening, at the Royal United Service Institution, Whitehall. Mr. William Worby Beaumont, the President for 1898, occupied the chair, and presented the premiums awarded for papers read during that year, viz.:—The President's Gold Medal to Mr. William Fox for his paper on "Reservoir Embankments, with Suggestions for Avoiding and Remedying Failures." The Bessemer Premium to Mr. Sherard O. Cowper-Coles for his paper on "Protective Metallic Coatings for Iron and Steel." The Rawlinson Premium to Dr. J. C. Thresh for his paper on "The Protection of Underground Water Supplies," and a Society's Premium to Mr. George Thudichum for his paper on "Bacterical Treatment of Sewage." Mr. Beaumont then introduced the President for the present year, Mr. John Corry Fell, to the meeting, and retired from the chair, receiving a unanimous vote of thanks for his services during the past year. Mr. Fell then proceeded to deliver his inaugural address. After thanking the members for having elected him to the chair, the President referred to the present satisfactory position of the Society and the work of the past year. He regretted to say that during the past year they had lost by death no fewer than six of their honorary members, namely, Sir William Anderson, Sir Henry Bessemer, Sir James N. Douglass, Sir John Fowler, Lord Playfair, and Sir Robert Rawlinson. The Society, however, was honoured by having the vacancies thus created filled by Sir John Wolfe Barry, Sir Albert John Durston, Sir David L. Salomons, Prof. A. B. W. Kennedy, Mr. W. H. Preece, and Mr. Alexander Siemens. Turning next to the question of the protection of inventions by patent in engineering practice, the President pointed out that it was a curious fact that civil engineers availed themselves less than any other members of the profession of the privileges accorded to inventors by patent, designs, or copyright protection. This, he said, was perhaps due to the circumstance that civil constructive engineers took a higher professional standpoint, and considered that the credit attached to their designs, however useful or beautiful, was a sufficient reward without seeking to retain a monopoly in them by patents, even for a time. This view, he said, did not extend to the mechanical branches of the profession, where every little detail improvement in machinery was protected, and a commercial end thus served. He did not, however, see why the same principle should not be observed by the civil engineer in regard to bridges, roofs, girders, and the like constructive details. As regards invention as represented by nationalities, the President observed that it had been said that the British nation was less inventive than the American. Prior to 1883 that view appeared to be supported by the number of patent applicants in the United States as compared with those in Great Britain, which in 1883 was over 30,000 for the United States, and barely 6,000 for Great Britain. This discrepancy appeared to have been accounted for by the high rate of Government fees in Great Britain, which were much in excess of those in the United States. Upon a reduction of the fees in 1883 the applications rose from 5,993 in that year to 17,110 in 1884, and they had now reached over 30,000 per annum, and Great Britain now took a foremost place in the inventive world. Taking an average of the last ten years, about half the applications come to completion. About 20 per cent. of the completed or 10 per cent. of the applications are renewed up to seven years, and 5 per cent. of the completed or 2½ per cent. of the applications are maintained to fourteen years. With regard to successful invention, the President observed that the conditions should be the result of analysis or synthesis, not mere chance dashes into an unknown field. The method of analysis may be defined to be first an appreciation of a want to be met, with which the inventor is familiar, and then by a laborious selection from what is known, the development, by successive efforts, of a combination of suitable means to meet the want. The President then went on to point out the necessity of having a special Court for the trial of patent actions. He had for long past been of opinion that such a Court should be established, and of late the Lord Chancellor and other judges had expressed the same views. They had publicly attributed the block in the Law Courts to the increasing number of patent cases, and the inordinate time many of them occupied. So serious was the condition of matters that the Lord Chancellor upon one occasion intimated that it might be necessary to hand over to a special tribunal the trial of cases for which the ordinary method of procedure appeared to be inapt. Mr. Justice Romer, too, who has had very considerable experience in trying patent cases, has also expressed the opinion that it was a great hardship that the proper business of the Court should have to wait for the trial of prolonged patent actions. The President pointed out that the remedy undoubtedly was the establishment of a Patent Court presided over by a judge possessing the necessary qualifications for dealing with patent actions, and whom it would not be difficult to find. The President then proceeded to give a short summary of the advances made of late years in various departments of engineering, in which he first referred to the increase in horse-power in engines which was obtained from a minimum of dead weight of material, and he explained the way in which it had been effected. In steam boilers, too, great advances had been made by the development of the water-tube system. He then referred to the progress made in electric lighting and in the application of electricity to the driving of machinery, especially in its use on railways. In this latter connexion he described the recent development of the electric railway system in the metropolis. Improvements in gas lighting and the progress of acetylene as an illuminant were then discussed, and, finally, the latest phases of naval construction, including submarine torpedo boats, were considered. At the close of the address, a hearty vote of thanks was accorded to the President.

THE BUILDING TRADE DISPUTE.

WE understand that the vote of the Plasterers' Union, in regard to the dispute as to foremen, has gone largely in favour of withdrawing the resolution which laid down that all foremen should become members of the Association. Mr. Benjamin J. Greenwood, the President of the Central Association of Master Builders, has issued the following circular:—

"It is one of the most inexplicable phenomena of our times that some employers in the building trades should be content to stand selfishly aloof from any trade organisation, and idly watch the rising tide of trade union intolerance, which threatens to overwhelm all private enterprise, and reduce employers to a state of abject submission

Surely if ever there were need for all employers to stand shoulder to shoulder in the defence of their rights it is at the present moment. The present revelations as to the outrageous demands of the National Association of Operative Plasterers have come as a shock to the public, who evidently have no conception of the state of things existing in the building trade. Moreover, the Press, with a voice of unprecedented unanimity, have condemned the wanton aggression of the Plasterers' Union.

Whilst the workmen do not hesitate to make great sacrifices for the advancement of their welfare, and their discipline and unanimity is remarkable, is it not absolutely culpable that the Central Association of Master Builders should be weakened by such firms as yours? If your apathy brings about a further surrender of employers' independence, you will incur a responsibility that may justly bring upon your head the reprobation of those who may follow you in your business.

I may state that our association wages no warfare with trade unionism in its legitimate sphere, but is organised for the benefit and protection of trade interests, and for resistance to the intolerable demands that are put forward under the guise of trade unionism.

At the meeting of the members of the building trades on the 24th inst. (January), there was a unanimous decision to take prompt measures to deal with the National Association of Operative Plasterers, and a large fund was raised spontaneously at the meeting for the purpose, but you must surely realise that, whilst this association represent the great bulk of the trade, yet the firms that fail to come into union with us become, *nolens volens*, a source of weakness to the movement.

I shall esteem it a favour if you will give the situation your careful consideration, and fill up and return the enclosed form of application for membership, in which case I shall be pleased to propose your election."

Accompanying this circular is another, signed by Mr. T. Costigan, the secretary of the Central Association of Master Builders, in which he says:—

"In the interest of the Strike Fund, which was spontaneously and handsomely started at the meeting on January 24, I venture to ask you to show your loyalty to your own interests, and to those engaged, like yourself, in the building trades, to contribute to it as handsomely as you can."

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, at the County Hall, Spring-gardens, Mr. McKinnon Wood, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Hammersmith Vestry 12,785*l.* for street improvements; the Hampstead Vestry 2,560*l.* for electric lighting purposes; the St. Pancras Vestry 39,000*l.* for electric lighting works; the Shoreditch Vestry 14,375*l.* for various works; and the Wandsworth District Board 2,000*l.* for street improvements.

Combined Drainage.—The Parliamentary Committee recommended, and it was agreed, "That the Metropolitan Sewers and Drains Bill in the form agreed to by the conference of local authorities be introduced into the House of Lords during the ensuing Session."

Metropolis Acts Amendment Bill.—The same Committee recommended, and it was agreed, "That the Metropolis Management Acts Amendment (By-Laws) Bill, in the form passed by the House of Lords in the Session of 1898, be re-introduced in that House during the ensuing Session."

London Street Improvements.—The Committee also recommended, and it was agreed, "That the Street Improvements (London) Bill, prepared to give effect to the Council's resolution on January 9, 1896, with such amendments as may be necessary to carry out the instructions of the Council on June 1, 1897, be introduced into Parliament during the ensuing Session.

Places for Cremation.—The Committee recommended—"That the Metropolitan Burial Boards (Cremation) Bill be not further proceeded with."

Sir A. Arnold moved an amendment to refer the recommendation back, and protested against such an important sanitary question being shelved by the Council. There were 130,000 deaths in London per annum, and only 640 acres of burial-grounds available, which meant that the whole space might be occupied within five years. On the other hand, crematoria were being extensively adopted in various parts of the provinces, and he had received from the Local Government Board very important information on that subject.

Mr. Cornwall, on behalf of the Committee, said they understood there was no probability of getting the Bill passed during the present session; but if the Council desired it the Committee were quite willing to proceed with the Bill. He therefore consented to the report being referred back.

The amendment was thereupon agreed to.

District Surveyors' Returns.—The Local Government and Taxation Committee reported as follows, the recommendation being agreed to:—

"In our report to the Council on the resolutions passed by the conference on transfer of powers, we

stated that we would bring up recommendations as to supplying the Local Authorities with the first part of the monthly return made by each District Surveyor in London. Every District Surveyor, under Section 160 of the London Building Act, 1894, is required to make this return to the Council each month. The return consists of three parts. The first gives a list of all building operations of which the District Surveyor has had notice, or which he has discovered; the second gives a list of all the works, &c., which are finished, with the fees chargeable; and the third gives the fees actually received and those which are irrecoverable. We believe the vestries desire to have the first part of the return, and we are of opinion that it should be furnished to them. We have communicated with the Building Act Committee, who have informed us that they see no objection to the proposal, but that as it would entail considerable clerical labour to the Council, a small charge (not necessarily the whole cost) should be made to the vestries who may wish to have copies. We recommend—That Part I. of the monthly return prepared by each district surveyor under Section 160 of the London Building Act, 1894, be supplied to such Local Authorities as desire copies, at a charge to be fixed by the Building Act Committee; and that it be referred to that committee to make the necessary arrangements."

Band-stand, Victoria Embankment-gardens.—The Parks and Open Spaces Committee recommended, and it was agreed, that the Council do approve the estimate of 650*l.*, submitted by the Finance Committee, and do authorise the construction in the Villiers-street section of the Victoria Embankment-gardens of a permanent band-stand in accordance with the design prepared by the architect; that the tender of Messrs. McDowell, Stevens, & Co. to execute the ironwork of the superstructure as specified for the sum of 314*l.* be accepted; and that the Parks and Open Spaces Committee be authorised to obtain tenders for the construction of the foundations and platform and the painting work.

Proceedings in the High Court as to the Formation of Openings in the Party Wall between Nos. 45a and 46a, Basinghall-street, E.C.—The Building Act Committee reported as follows:—

"The Council, on October 25, 1898, directed the solicitor to take the necessary steps for obtaining the decision of the High Court upon the question raised with reference to the formation of openings in the party wall between Nos. 45A and 46A, Basinghall-street. The case came before the Divisional Court on January 20, when the Court delivered a written judgment dismissing the Council's appeal on behalf of the District Surveyor. It may be remembered that the Alderman who heard the summons taken out by the Council at the Guildhall, held that the respondents had committed no offence in making an opening on the first floor in the party wall between Nos. 45A and 46A, Basinghall-street, such buildings being not wholly in one occupation, on the ground that as the buildings were originally constructed with an opening on the ground floor (long since bricked up) which rendered them when originally built available for one tenant, they came within the exemption specified in section 77 (1) of the London Building Act, 1894, which states that buildings shall not be united except where they are wholly in one occupation *or are constructed or adapted to be so.* The buildings had, in fact, not been at any period of their existence wholly in one occupation. The Council's contention was that the words 'or are constructed or adapted to be so,' did not mean originally constructed, as the Alderman had held, but constructed at the time of uniting. The High Court held that the Council was right in this view, and that the buildings were not within the exemption specified in the Act; but that the making of the openings complained of did not in fact unite the buildings, because they were already united by an existing opening on the second floor. The Court overruled the Council's contention that, as the second floor opening had been illegally and surreptitiously made, it could not be taken advantage of by the respondents. It is unsatisfactory that the Council should lose on such a point a case in which its contention on the main issue was upheld. The question of the irregular uniting of buildings is a very important one from a fire-risk point of view, and we propose, as the Council cannot appeal further in this case, that the question should be raised again at the earliest favourable opportunity."

Having transacted other business, the Council adjourned.

BOOKS RECEIVED.

LANDMARKS IN ENGLISH INDUSTRIAL HISTORY. By G. Townsend Warner. (Blackie & Son.)

A COURSE OF INSTRUCTION IN WOOD-CARVING ACCORDING TO THE JAPANESE METHOD. By Charles Holme. (Offices of *The Studio.*)

THE HOMERIC PALACE. By N. Morrison Isham. (Preston & Rounds Co., Providence, U.S.A.)

ENGLISH CATHEDRALS, ILLUSTRATED. By Francis Bond, M.A. (Geo. Newnes)

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

Artisans' Dwellings—Peabody-buildings, Roupell-street, Lambeth.

Lambeth, North.—(*a*) That the resolution of the Building Act Committee of August 30, 1898, acting on behalf of the Council, with regard to the application of Messrs. W. Cubitt & Co., for the trustees of the Peabody Donation Fund, for sanction to the erection of two blocks of artisans' dwellings on the north side of Roupell-street, Lambeth, be rescinded. (*b*) That the Council do make an order as follows:—Whereas Messrs. W. Cubitt & Co., of 258, Gray's Inn-road, London, on July 28, 1898, under the provisions of Section 42 of the London Building Act, 1894, delivered, on behalf of the trustees of the Peabody Donation Fund, at the County Hall, plans of two blocks of intended dwelling-houses to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on a site on the north side of Roupell-street, Lambeth. . . . The Council, in the exercise of its powers under Section 42 of the said Act, but in no way otherwise than under such Section, does by this order sanction the said plans. . . .—Agreed.

Dwelling-houses on Low-lying Land.

Plumstead.—That the Council, acting on the decision of its Chief Engineer, given under the provisions of Section 122 of the London Building Act, 1894, do refuse permission for the erection of a house next Wood Villa, Station-road, Plumstead (Mr. J. O. Cook for Mr. A. Martin).—Agreed.

Lines of Frontage.

Kensington, South.—That permission be given to Mr. A. A. Dixon to retain a projection (an illuminated sign) at the "Old George" public-house, Church-street, Kensington, extending beyond the general line of buildings in that street, on condition that he do remove such sign at the expiration of one year from February 7, 1899.—Agreed.

Strand.—That permission be given to Mr. G. J. Taylor to retain projections (illuminated signs) at the "Star and Garter" public-house, 62, Poland-street, St. James's, extending beyond the general line of buildings in that street, on condition that he do remove such signs at the expiration of one year from February 7, 1899.—Agreed.

Kensington, North.—That permission be given to Mr. A. C. Payne to retain a projection (an illuminated sign) at the "Portland Arms" public-house, Portland-road, Notting Hill, extending beyond the general line of buildings in that street, on condition that he do remove such sign at the expiration of one year from February 7, 1899.—Agreed.

Newington, West.—A boundary wall on the south side of Manor-place, Walworth, adjoining the London, Chatham, and Dover Railway (the Vestry of Newington).—Consent.

Hoxton.—That the application of Mr. J. E Saunders for an extension of the period within which the erection of a building on the site of five houses, with forecourts, on the east side of Clifton-street, Shoreditch, between Worship-street and No. 9, Holywell-row, was required to be commenced, be granted, upon condition that the building referred to be commenced within nine months from May 3, 1899.—Agreed.

Lewisham.—A house on the west side of Perry-rise, Lewisham, to abut upon Queenswood-road (Messrs. Eastman Brothers).—Consent.

Hampstead.—Houses with shops on the western side of South-end-road, Hampstead, and also the erection of houses with bay windows on the south side of John-street (Mr. C. J. Bentley for Mr. F. T. Binington).—Refused.

Islington, North.—A theatre on the north side of Rock-street, Finsbury Park (Messrs. Murray & Foster for Theatre Sites, Limited).—Refused.

Clapham.—One-story shops on part of the forecourts of Nos. 79, 81, 83, and 83A, Battersea Park-road, Battersea (Mr. H. Bignold).—Refused.

Hampstead.†—A block of residential flats on the northern side of Finchley-road, Hampstead, at the corner of West Hampstead-avenue (Mr. J. Reynolds).—Refused.

Lewisham.—Two houses with shops on part of the forecourt of No. 27, London-road, Forest Hill (Mr. G. Tolley for Mr. A. J. Dorrell).—Refused.

St. George, Hanover-square.†—An iron and glass shelter at the Dover-street entrance to the Avondale Hotel, No. 68A, Piccadilly (Mr. H. Gascoigne for the Directors of the Avondale Hotel and Restaurant, and Hatchett's Restaurant, Limited).—Refused.

Walworth.—Five houses with bay windows on the site of Nos. 19, 21, 23, 25, 27, and 29, Dean's-buildings, Flint-street, Walworth (Mr. A. Romain for the Rev. E. St. John).—Refused.

Width of Way.

Westminster.—A building on the western side of St. Ann's-lane, Great Peter-street, Westminster (Messrs. Wilson & Pilcher, Limited).—Consent.

Islington, West.†—Buildings on the site of Nos. 78 and 80, York-road, and No. 11, Crinan-street, King's Cross (Messrs. Waterman & Lewis for Mr. B. Bridgwater).—Consent.

St. George-in-the-East.—The rebuilding of No. 54, Tait-street, Commercial-road, St. George-in-the-East (Mr. H. Moon for Earl Winterton).—Consent.

Space at Rear.

Paddington, South.—An addition on a portion of the open space at the rear of the "Mitre" public-house, No. 13, Edgware-road, Paddington, at the corner of Seymour-street (Mr. G. G. Pye for Mr. W. T. Ecclestone).—Consent.

Westminster.—A two-story stable in a yard approached from Causton-street, Vauxhall Bridge-road, Westminster, with an open space about such stable (Mr. W. H. Hills for the London Omnibus Carriage Company, Limited).—Consent.

Lines of Fronts and Width of Way.

Southwark, West.—An addition to a one-story factory about to be rebuilt on the west side of Harrow-street, St. George-the-Martyr, Southwark (Messrs. Hazeldine Brothers).—Consent.

Line of Fronts, Width of Way, and Artisans' Dwellings.

Camberwell, North.—Two blocks of buildings on the south side of New Church-road, Camberwell, between No. 52 and Edmund-street, with the boundary fence next Edmund-street (Messrs. N. S. Joseph, Son, & Smithem for the Four per Cent. Industrial Dwellings Company, Limited).—Consent.

Line of Frontage and Construction of Building.

Southwark, West.—An iron gangway across The Grove, Southwark (Messrs. J. D. Mathews & Son for Messrs. Barclay & Fry).—Consent.

Line of Frontage and Temporary Building.

Hammersmith.—A temporary office building in the area of No. 49A, Sulgrave-road, Hammersmith (Mr. R. Cotter).—Consent.

Width of Way and Construction of Building

Limehouse.—A temporary wood and iron room in the yard at the rear of the Friends' Mission Institute, Commercial-road East, Limehouse, at less than the prescribed distance from the centre of Hilton-street and Dorset-street (Messrs. E. Saunders & Son). Refused.

Line of Frontage and Space at Rear.

Hackney, South.—Additions at the rear of No. 71, Chatsworth-road, Clapton, to flank upon Blurton-road (Mr. H. Dearsley for Mr. H. Lunken).—Refused.

Formation of Streets.

Haggerston.—That an order be issued to Mr. B. Crewe, sanctioning the formation or laying-out of a new street for foot traffic only, to connect Cotton's-gardens with Hudson's-court, Kingsland-road, Shoreditch (for Mr. J. Weibking and Mr. H. S. Parker). That the name Cotton's-gardens (in continuation) be approved for the new street.—Agreed.

Stepney.—Widening and adaptation throughout of Romford-street, Commercial-road East, as a street for carriage traffic (Mr. R. Plumbe for the Chairman and House Committee of the London Hospital).—Consent.

Hampstead.—A variation from the plan sanctioned by the late Metropolitan Board of Works on April 24, 1885, for the formation or laying-out of Fordwych-road, Hampstead, so far as relates to an alteration in the outlet of that road into Richborough-road (Messrs. Tuckett & Son)—Consent.

Islington, North.—That an order be issued to Messrs. Wootton & Green, sanctioning the formation or laying out of a street for carriage traffic, to lead from Highcroft-road to Crouch Hill, Islington. That the name "Heathville-road" be approved for the new street.—Agreed.

Lewisham.—That an order be issued to Mr. H. A. Rawlins, sanctioning the formation or laying out of a street for carriage traffic, to lead from Stanstead-road to Marler-road, Catford (for the trustees of the late Mr. M. David). That the name "Northwood-road" be approved for the new street.—Agreed.

Lewisham.†—That an order be issued to Messrs. Herring, Son, & Daw, refusing to sanction the formation or laying out for carriage traffic of three new streets on the Park House Estate, on the west side of Ravensbourne Park, Catford, and the widening in connexion with the proposed streets, of a portion of a street leading out of Blythe Hill.—Agreed.

Means of Escape from the Top of High Buildings.

Strand.—That Messrs. Saville & Martin be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the fifth and sixth floors of the Hotel de Paris, Nos. 7 and 9, Leicester-square, St. Martin-in-the-Fields (for Mr. R. Baker).—Agreed.

* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Width of Way and Height of Dwelling.

Finsbury, East.—Additions at the rear of a warehouse on the west side of Golden-lane, St. Luke's, to abut upon Bayer-street (formerly Turk's Head-court) and Basterfield-street (formerly French-alley (Mr. L. Solomon for Mr. C. Bayer).—Consent.

The recommendations marked † are contrary to the views of the Local Authorities.

GLASGOW SCHOOL OF ART.

THE last of a series of lectures on "The Architecture of the Renaissance in France," by Mr. W. J. Anderson, A.R.I.B.A., was delivered on February 6, having for its principal subject the Roman revival of Napoleon and the Empire styles, but treating also of the work of the present day, and the ever-fresh manifestations of the vitality of the Renaissance in France. From the foreign character, the sinuous unconstructiveness of the graceful art of Louis Quinze, there took place before the end of his reign a decided reaction, which had, at least, greater structural fitness and tradition to recommend it, while its materials were enriched by the contemporary Pompeian discoveries. Some of the interiors of Gabriel, such as the Salon des Marechaux, mark this return to the straight line, and illustrate the Transition and the Louis Seize, which in such works as the Salon de Reception of the Petit Trianon, developed a style of much dignity, simplicity, and elegance. Various interesting tendencies in figure sculpture and in applied metal decoration were noticed. It was remarkable that the great Revolution with its terrific upheaval hardly rippled the stream of artistic tradition. While Napoleon's ambition after a new Roman Empire, with Paris as the capital, rendered it appropriate to seek architectural expression after the manner of the Romans in Heröons like the Madeleine, triumphal arches and columns like those of the l'Etoile and the Vendôme, the direction of the movement had already been prepared, notably by David and his school in their antiquarian paintings prior to the Revolution. The natural decline of this Roman revival followed the deposition of Napoleon, and left behind it a weak academic school, satisfied with the past, to whose unfruitful teaching was soon opposed the theory and practice of the romanticists or revivers of mediævalism, and the more vigorous intellectual opposition of the rationalist school, sometimes distinguished as "Neo-Grec," though its principles do not involve any reaction of past styles. Owing to the lack of breadth in architectural education, any corresponding school was at the time impossible in England, and its principles still fight for acceptance, even in France. Examples of the thoughtful work of Duban, L. B. Duc, and Ballu are shown in the Palais de Justice, the Ecole des Beaux Arts, and the Church of La Trinite. After illustrating some of the other works of the Second Empire, and of the period succeeding the Russian war, the lecturer, in conclusion, spoke of our debt to France, which of all modern civilisations had kept most brightly aflame the sacred lamp of art, and diffused its light abroad. The infinite advantage of a sound educational tradition in art was proclaimed by the very outward aspect of Paris, which by this cause chiefly had become the best type of the modern city, reflecting in its varied architectural monuments the many-sided aspects of present-day civilisation, yet in such a way as to constitute a distinctive and highly significant style of modern art.

Correspondence.

To the Editor of THE BUILDER.

CEILING FUSES.

SIR,—I notice, in your remarks upon the discrepancies which exist among insurance companies in regard to electric lighting, that reference is made to ceiling fuses, some of the companies insisting upon them, and others regarding them as unnecessary.

It appears to me that, from one point of view, they are very undesirable, especially in a lofty room; as, should a fuse be burnt, it is absolutely inaccessible except by the introduction of a telescopic ladder or scaffolding.

As a case in point, two ceiling fuses were burnt last week in a very lofty dining-room, during a ball, in the residence of a nobleman, and two out of six clusters of lights were consequently extinguished. Had the fuses been accessible, they could have been replaced in a few minutes, an electrician being on the premises for the purpose; under the circumstances, however, he could only regard anxiously the remaining lights, and devoutly hope that they might not share the same fate.

The wires in the residence in question are led through iron piping, and I am informed by experts that when this is the case ceiling fuses are unnecessary. If this be true, they should surely be abolished, as it is obviously undesirable that the supper-room at a large entertainment should be suddenly plunged in darkness.

LUX IN TENEBRIS.

OBITUARY.

MR. T. C. HINE.—We much regret to record the death of the veteran architect Mr. T. C. Hine, of Nottingham, at the age of 85. Mr. Hine was born in 1813, and was in course of time articled to Mr. Habershon, the architect, who was in partnership with Mr. Patterson, the builder. In those days it was a common occurrence for architects and builders to be associated as partners. When Mr. Hine attained his majority (Mr. Habershon having retired) Mr. Patterson took him into partnership. They were together for about fifteen years, doing a great deal of work in the city and county and the neighbouring counties. During this time he built the house in which he died. In 1849, on the dissolution of partnership, he commenced practising on his own account and soon had a large practice in Nottingham and the Midland counties. He erected and restored nnmerous churches and vicarages, and built most of the principal warehouses and factories in the Lace Market at Nottingham. In 1854 Mr. Hine was appointed surveyor to the Newcastle estates, and subsequently laid out the Nottingham Park estate, designing and erecting most of the houses upon it. He also built, for the Duke of Newcastle, the collieries church at Shire-oaks. In 1867 Mr. Hine took into partnership his eldest son, Mr. George Thomas Hine, and they continued a large practice until the year 1890, when Mr. Hine, sen., retired from practice. In 1876 Mr. Hine suggested to the Corporation of Nottingham the idea of leasing the Castle from the Duke of Newcastle's trustees and converting it into a museum of arts. The work of restoration was carried out under his direction. Mr. Hine was also architect of the Great Northern Railway Station in Nottingham. Mr. Hine was an indefatigable worker, and after his retirement occupied himself with water-colour drawing and sketching. His house, designed by himself, as before observed, had a drawing room of the height of two of the stories, with an open timber roof. He was a most hospitable and genial man, full of interesting conversation and reminiscences, and with a great variety of interests in life. Mr. Hine leaves three sons and four daughters. The name of one of the sons, Mr. G. T. Hine is well known to our readers in connexion with his large practice as the architect of asylums and buildings of that class.

M. ALFRED SISLEY.—We have to record the death of M. Alfred Sisley, the painter, who was one of the most important artists of the modern French Impressionist school. He was an Englishman by birth, and in his early years lived at Hampton Court; but for a long time past he had taken up his residence at Moret, near Fontainebleau, where he found the subjects or suggestions of a good many of his landscapes. Along with de Nittis, Claude Monet, Pisaro, and Renoir, he contributed largely to the evolution of the new school of painting, and was a powerful landscape-painter with a style of his own. He has left a considerable number of works, but, except in the Caillebotte collection at the Luxembourg, they are not at present to be found in any of the public galleries of France.

GENERAL BUILDING NEWS.

CHURCH, BLAIR'S COLLEGE, ABERDEEN.—Contracts have been entered into for the building of a Collegiate Church at St. Mary's College, Blairs, near Aberdeen. The church is 120 ft. long and 35 ft. wide, having side chapels 22 ft. long and 17 ft. wide. The choir will seat 150 students, and the church is divided by an oak screen, and accommodation provided for 150 people. The tower and spire will be 150 ft. high. The church will be built of grey granite, with freestone tracery. The internal fittings are composed of oak and pitch pine, carved oak stalls and screens, with an open timbered roof. The church, when completed with stalls and fittings, &c., will cost upwards of 12,000*l*. The architect is Mr. Robert Curran, of Warrington.

CHURCH, VICTORIA, EBBW VALE.—The foundation stone was laid on the 23rd ult. of St. Mary's Church, Victoria, in the parish of Ebbw Vale. The church will consist of a nave, chancel, and south porch, with small vestry on the north side of the chancel. The style is of Early English character. The general walling is of local grey stone. The roof, of deal, is open-timbered and covered with green slates, finished by a red terra-cotta ridge and gable crosses. The interior affords accommodation for 256 persons, with deal open seats, stalls, and pulpit. Mr. Bruce-Vaughan, of Cardiff, is the architect, and the contract has been taken by Mr. T. T. Davies, of Ebbw Vale.

PRIMITIVE METHODIST CHAPEL AND SCHOOL, BIRTLEY, NORTHUMBERLAND.—The memorial stone has just been laid of this building. The new chapel will occupy a site in the Station-road, Birtley, and it will have sitting accommodation for 300 persons, while the school behind will be sufficient for 250 children. There will also be vestries above the school-room. The estimated cost of the building is 2,750*l*. The architect is Mr. Eugene E. Clephan, of Newcastle; and the contractors are Messrs. Davison & Bolam, builders, of Blaydon and Birtley.

RESTORATION OF LITTLE TORRINGTON CHURCH, DEVON.—This building has just been reopened after restoration. About a year ago, some apprehension being felt as to the condition of the tower, Mr. Harbottle Reed was called in to examine it, and his report upon its dangerous state was verified in the operations which have just been brought to a conclusion by the contractor from the architect's plans and specifications and under his supervision. The upper stage and pinnacles have been rebuilt, a portion of the buttresses renewed, and the fractured walling strengthened and made sound. The west gallery has been removed, and a new floor placed in the tower. A traceried oak screen is to be executed from Mr. Harbottle Reed's design. In addition to the work on the tower, the arrangement of the choir has been remodelled, new oak platforms have been formed for future choir stalls, and the aisle laid with encaustic tiles and new Portland stone steps. The pulpit has been reconstructed by Mr. Boundy.

RESTORATION OF TREGONY CHURCH, CORNWALL.—The Church of St. Cuby, Tregony, has just been reopened after restoration. The roof has been lowered to the former height, the arcades have been replaced, two of the original pillars have been discovered and put into position, a double roof has been constructed, granite windows have been inserted in place of wooden frames, the gallery has been removed, the tower opened out into the church, and the whole building reseated and refloored. Messrs. St. Aubyn & Wadling, of London, were the architects, and Edwards & Son, of Praze, the contractors.

SCHOOLS, DUBLIN.—On the 28th ult. the Archbishop of Dublin laid the memorial stone of the new National Schools at present in course of erection in Lower Sherrard-street in St. George's Parish. The plan takes the form of a Greek cross, the greatest length and breadth of the building being internally 124 ft. and 46 ft. respectively. It will consist of a single story. There are two main entrances from Sherrard-street, leading through porches, to the boys', and girls' and infants' schools respectively. The number of children to be provided for is 500. The contractor for the whole work is Mr. R. Farquharson, and the architect, Mr. W. M. Mitchell, R.H.A., both of Dublin.

FLOUR MILLS, BIRKENHEAD.—Messrs. W. Vernon & Sons have just opened their new flour mills, Birkenhead. The buildings are four stories high, and have been built from designs by Mr. John Clarke, architect, of Liverpool.

BEDFORD PALACE OF VARIETIES, CAMDEN TOWN.—On the site of the old Bedford Palace of Varieties, Camden Town, a new building has been erected from the plans of Mr. Bertie Crewe. The building has a frontage to the High-street.

PALACE OF VARIETIES, KILBURN.—A new Palace of Varieties is to be erected on the site of the existing Theatre Royal and the adjoining properties, which will form a corner block. The building will be without columns, and an uninterrupted view of the stage will be given from all parts of the auditorium, which will accommodate 1,500. The style adopted by the architects, Messrs. Palgrave & Co., is a free rendering of French Renaissance; the exterior principal front will be in glazed terra-cotta faience work by Burmantofts, Limited. The estimated cost is about 30,000*l*., apart from the various properties to be acquired. It is expected that the new building will be ready for opening in the late autumn. Messrs. Wylson & Long are acting as consulting architects.

EMPIRE THEATRE, BRADFORD.—The new Empire Palace of Varieties at Bradford was opened on the 30th ult. The site of the new music-hall is in Horton-road, and the principal entrance is made through what was the Alexandra Hotel. Two towers, 100 ft. high, are placed at each corner of the frontage, and are surmounted by upper domes, each capped by a miniature cupola. A colonnade has been arranged on the ground floor, on passing through which one enters a vestibule, and thence into a crush-room, an apartment about 45 ft. square. The auditorium measures 80 ft. from the curtain line to the back wall of the pit, with a clear width of nearly 60 ft. At each side of the auditorium, on the balcony level, hanging side balconies are schemed. The electric light supply is derived from a complete electric plant at the rear of the building. The building is constructed of concrete and steel. The heating throughout is by low-pressure hot-water pipes and radiators. Large saloons are provided on every tier. The cost of the building is about 30,000*l*. Mr. W. G. R. Sprague, of London, was the architect.

ADDITION TO PEMBROKESHIRE INFIRMARY.—An operating theatre has just been built in connexion with this infirmary, with rooms for the nursing staff. The cost of its erection has been about 1,200*l*. The architect was Mr. D. Edward Thomas, of Haverfordwest, and the builder was Mr. Joseph Lewis, of the same town.

SANITARY AND ENGINEERING NEWS.

TESTING OF HOUSE DRAINS, &C.—A debate was opened by Dr. Mansel-Howe on Friday last week at King's College on "The Testing of the House Drain and Stack Pipes; their Cleansing and Disinfection after Illness," in connexion with the classes of instruction for plumbers and sanitary inspectors conducted at the College. He showed by lantern illustrations some of the ordinary means adopted by plumbers for examining the reliability of pipes, viz.

the water test, the smoke test, and the various odour tests. He also illustrated and considered the testing of pipes by compressed air and the use of the mercury gauge, and of rarefaction of the air in conjunction with the vacuum gauge, claiming for these tests greater simplicity, efficiency, and the lesser liability of damage to property than by the use of the water test. The cleansing of the house drain and shaft pipes was advocated as a wise and sanitary operation to be followed from time to time, independent of sickness; but after many illnesses it should be insisted on by the public Sanitary Authorities. At the present time, when so many house drains were provided with inspection, ventilating, and disconnecting chambers, it was comparatively easy to thoroughly brush out and scour this channel; and in like manner the fittings and traps in association with the stack-pipes, were provided in all better-class plumbing work, with inspection and cleansing eyes, in order that the curves and bends of the pipes in these fittings might be cleansed. Unfortunately, these inspection eyes were rarely employed for cleaning purposes pure and simple, and were only made use of when some temporary stoppage or lodgment in the pipes necessitated immediate attention. When, however, the house-drain and stack-pipes had been treated mechanically by means of brushes, &c., it was recommended that all these pipes should be subjected to the disinfecting properties of chlorine gas, for the destruction of all pathogenic germs that were lingering in the inaccessible parts of the pipes, and in the meshes of the hemp too frequently found in the many unions of the house drain pipe.—In the discussion which followed, the opinion was expressed that hemp might be very readily dispensed with in the uniting of iron drain pipes, and that when the house drain was constructed of stoneware pipes hemp should never be employed.

LUMLEY BRIDGE, CHESTER-LE-STREET.—A new bridge, over the River Wear, has just been opened near Lumley Castle. The bridge consists of a centre span of 120 ft. and two side spans each 37 ft. long. The main and approach girders are of mild steel lattice work, the bottom flanges being efficiently wind-braced and the top flanges supported with struts and overhead arches. The flooring consists of creosoted timber with water boards at each side. The piers are each composed of four large wrought-iron piles properly braced, formed of four segments rivetted together, with cast-iron pile points and driven 21 ft below the river bed. The structure is calculated to bear a safe distributed live load of 140 lb. to the square foot, with four times this amount for the ultimate load. The engineers were Messrs. D. Balfour & Son, of London and Newcastle-on-Tyne, and the erection has been done by Messrs. Head, Wrightson, & Co., of Stockton-on-Tees.

PROPOSED VICTORIA VIADUCT, KIRKCALDY.—It is proposed to erect a new Victoria Viaduct across the East Burn Valley, Kirkcaldy. The height of the bridge is to be 85 ft., and the width between the parapets 36 ft., while the road is to be 40 ft. wide. Mr. William D. Sang, C.E., Kirkcaldy, is the engineer, and the cost of the undertaking is expected to be from 14,000*l.* to 16,000*l.*

TEIGNMOUTH WATER SUPPLY.—Improved works have been opened for the supply of water to Teignmouth. There are two reservoirs, the Hazeldown and the Landscore, the first capable of holding two million gallons of water, and the other 600,000 gallons. The whole of the work has been carried out under the direction of the Council's engineer and surveyor, Mr. C. Jones.

STAINED GLASS AND DECORATION.

WINDOW, ST. ANNE'S CHURCH, BIRKENHEAD.—A stained-glass window, given in memory of the late Mr. J. Laird by his widow and children, has been placed in the north side of the chancel of St. Anne's Church, Birkenhead. It consists of two lights, and was designed by Mr. H. Walter Lonsdale, of London, and executed by Messrs. Heaton, Butler, & Bayne.

FISHMONGERS' HALL.—In the course of last year the Court of the Fishmongers' Company decided to redecorate their Great Hall, with the entrance and main staircase leading to it. Mr. Crace was invited to assist the Company's surveyor, Mr. H. Chatfeild Clarke, in reporting upon the treatment desirable; and their joint report was adopted by the Court. The works decided upon were carried out during the autumn and completed before Christmas. The previously existing decorations were executed thirty years ago under the direction of Owen Jones; and some of the work then done remains in the reception rooms adjoining the hall. The building itself was erected in 1831 from the designs of H. Roberts, and is in the rather cold "Greek" character affected at that time. The late Sir Gilbert Scott, who was articled to Mr. Roberts, took some part in supervising the erection. It was an instruction of the Court to Mr. Chatfeild Clarke and Mr. Crace that the architectural detail and character should in no wise be disturbed. This has been strictly adhered to; but a much warmer and more "hospitable" result than before has been attained by the colouring, of which the following is a brief description:—

The square entrance hall, which has a flat coffered ceiling divided by flat beams, and walls divided by pilasters, has the wall space of a Pompeiian red, the pilasters, frieze and cornice being of a vellum tint, relieved in the frieze by a moderate amount of ornament executed in dull yellow and chocolate brown. The pavement here, as also in the adjoining staircase corridor, is of marble mosaic, laid out in a simple geometric scheme in mixed shades of white with bands of black, light red, grey and yellow. The corridor in question and the lower story of the grand staircase, to which it is open on one side, have also red as the ground colour of the walls; at the top a frieze is painted in light ornament upon the red ground, interrupted at intervals by panels or medallions with dark grounds. Below, a dado of simple Pompeiian character is worked on a darker tone of red. The large piers at intervals are in light colour with bronze and gold enrichments; and the ceiling is vellum white with grey-blue panels, and some relief of bronze and gold in the mouldings. The doors and other woodwork here and there throughout are of oak, once French polished, but now bared of polish, brought to a natural surface of quiet tone, and wax-rubbed, the mouldings being gilt. In the grand staircase the red is continued up to the gilt string course on the first floor level, the niche in which Walworth's statue is placed being gilt, as also are the metal balustrades throughout. Above this level the walls are panelled, as well as being broken by scagliola pilasters and columns, by doorways, and by the large triple window. In the panels are full-length portraits; the panels and margins being in two low tones of green, divided by mouldings in gold and vellum. The ceiling here is also coffered in square panels, now in quiet light-blue with gilt centre flowers; and the enrichments of the cross-beams, mouldings, &c., as also of the cornice and architrave, are mainly in bronze and gold. There is a rich maroon ground in the frieze, intended for inscription.

The triple window of three equal lights (originally filled with ground glass and coloured margins) is now glazed with leaded glass of which the design is expressive of the sea fisheries, the general ground being white, ornamented with sea plants, fish, and festoons of nets, while the borders are formed entirely of seaweeds and "crustaceans," all carefully drawn from nature. In the centre of the middle light are the Company's arms and supporters, while on either side are the arms of the former companies of stock-fishmongers and salt-fishmongers, which were united in the existing Company in 1535. The great hall, with five windows on the east front, has its ceiling, which rises on a low, elliptic section, also divided into rectangular panels with flowers in the centre. These are divided into groups by bands of Greek guilloche ornaments, which have been solidly gilt with good effect, as have the centre flowers, the panels being light blue, and the mass of the ceiling margins and framework in broken white. The cornice and frieze are in light tones with the enrichments gilt, and a dull red background to the scroll of the frieze. The scagliola pilasters remain, and the walls are painted in low-toned green as a ground for the pictures; whilst between the bronze and gold capitals of the pilasters, and close under the frieze are ranged the interesting series of old carved and gilt shields which commemorate the arms of the Prime Wardens from early in the seventeenth century. The woodwork here, as elsewhere, is of wainscot now freed from polish, and with the mouldings gilt; and a dado of similar wainscot panelling has now been added to connect the rest. A good effect is obtained by making the walls of the Music Gallery of a dull red. The hall has now been lit with electric light—partly from four points in the ceiling, where groups of lights are enclosed by pendent cut glass drops, and partly by lights concealed by the cornice on two sides of the hall. The light is under control by arrangements for the partial use of any portion of the system. This lighting has been entrusted to Messrs. Verity, of Regent-street. The whole of the decorative works were carried out by Messrs. Crace, of Wigmore-street.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. C. A. Nicholson, architect, has removed his offices from 28, Theobalds-road to 2, New Square, Lincoln's Inn.

REGISTRATION OF PLUMBERS.—A memorial has been presented to the Government urging them to deal with the Registration of Plumbers during the ensuing Session, in the interests of public health. The memorial points out that during the past twelve years a voluntary system for providing technical instruction and the registration of qualified plumbers has been in existence through the co-operation of the sanitary authorities and plumbers in the chief centres and towns of Great Britain and Ireland, and numerous petitions have been presented to Parliament to consolidate and extend the operations of the voluntary system under Parliamentary enactment. A Bill for the National Registration of Plumbers has been before Parliament for the last seven years. The general principles of the measure have been approved by large majorities on several occasions. It has also been supported by the Local Government Board under both Governments. The memorialists appeal to the Government to take the matter in hand on the grounds of urgency for the sake of public health, and of expediency, because the Bill is generally supported and is popular throughout the United Kingdom.

A NEW STREET.—The London County Council have given their consent to the formation of a new street, 50 ft. wide and nearly a quarter of a mile long, starting close to St. Paul's Schools at West Kensington and terminating opposite the house of the late Sir E. Burne-Jones. The street will be known as Fitzgeorge-avenue, and will be occupied on both sides of its entire length by blocks of residential flats. The contract for the whole operation is being carried out by Mr. Henry Lovatt, from the designs of Mr. Delissa Joseph, architect.

PROPOSED DEVONSHIRE STATUE, EASTBOURNE.—At a meeting of the Local Committee, held at the Eastbourne Town Hall on the 2nd inst., it was resolved to commission Mr. Goscomb John, one of four artists recommended to the Committee by the President of the Royal Academy through the Duke of Devonshire, to execute a statue of the late Duke of Devonshire, which is to be erected at a cost of 1,000 guineas, probably at the seaward end of Devonshire-place, Eastbourne. The statue, which is to be in bronze, will have a height of 9 ft. and will have a granite base.

THE ROMAN DEFENCES OF SOUTH-EAST BRITAIN.—At the Royal Institution on the 3rd inst. Mr. Victor Horsley delivered a lecture on "The Roman Defences of South-East Britain." He said that the many camps on the south-east coast which were mentioned in Antonine's itinerary were probably built on the sites of earlier camps, the original camp having a special interest as the work of the sailors of the British fleet of that day. Tiles had been found in the masonry stamped with the letters Cl.—BR.—standing for *Classis Brittanica;* and the evidence of coins pointed in the same direction. In discussing the structure of the *castra* Mr. Horsley pointed out that the masonry was not like that found at Pompeii. The walls were constructed not of great square blocks of stone, but with irregular masses of stone imbedded in concrete and with bonding courses of tiles at intervals. This structure was especially difficult to destroy. There were no remains showing whether the walls were battlemented at the top, but this was probably the case. It was a curious fact that in so many of the south-eastern camps of Britain one of the walls was apparently missing; but traces of the missing portion had been found in every case except, until recently, Lympne; and now, Mr. Horsley said, his excavations had enabled him to trace the missing portion of that camp.—*Times.*

THE LONDON SCHOOL BOARD AND THE ASSISTANT ARCHITECT FOR REPAIRS.—The weekly meeting of the members of the School Board for London was held on the 2nd inst. at the Board Room, Victoria Embankment, Lord Reay in the chair.—The debate was resumed upon the motion of Lord Morpeth, chairman of the Works Committee, "That the Board confirm the action taken by the committee in calling upon Mr. H. Bradfield, Assistant Architect for Repairs, to submit his resignation," to which the Rev. Father Brown had moved as an amendment, "That the resolution be referred back to the committee for further consideration." The circumstances which led the committee to submit the proposal to the Board were set forth in various reports relating to the condition of the drainage and sanitary arrangements at the Board's Brentwood Industrial School. A summary of the reports appeared in our last issue. A long debate took place, in which a number of members expressed the view that, even if Mr. Bradfield had committed an error of judgment, the sentence was more severe than the facts justified. Mr. Stanley urged that if the committee took the matter back the condition ought to be that the Local Government Board should be asked to name an expert to make an investigation, and that the report of the expert should be considered as final. Lord Morpeth thereupon accepted the amendment.

APPOINTMENT.—Mr. P. M. Beaumont, A.M.I.C.E., Borough Surveyor of Maldon, has been elected a Surveyor for the diocese of St. Alban's for the term of three years from March 1.

MEMORIAL STATUE, FORFAR.—The ceremony of unveiling the statue which has been erected to the memory of Provost Reid, in one of the principal streets of Forfar, was performed on the 4th inst. The site chosen for the memorial is in Castle-street, in close proximity to the Corporation Chambers. The statue stands 13 ft. high. The pedestal is of granite, 8 ft. in height, and the figure, which shows the late Provost seated in a chair, is life and a quarter in size. The sculptor is Mr. George Webster, Edinburgh. The bronze is by the firm of Messrs. J. W. Singer & Son, Frome. The statue was set up by Mr. James Maclean, builder.

ELECTRIC LIGHTING, BOOTLE.—Electric lighting works are being carried out at Bootle. The scheme has been designed and the carrying out of the works superintended by Mr. Thos. L. Miller, Liverpool, the Consulting Engineer to the Corporation; Mr. O. F. Francis acting as his clerk of works; the buildings being from the plans prepared by the Borough Engineer, Mr. J. A. Crowther.

NORTH STAFFORDSHIRE BUILDERS' ASSOCIATION.—The annual dinner of the members of the Potteries, Newcastle, and Leek branch of the National Builders' Association of Great Britain was held on the 2nd inst. at the Saracen's Head Hotel,

Hanley. There was an attendance of over sixty, and the chair was taken by Mr. J. Gallimore, of Newcastle, the President. After the loyal toast, Mr. Bowden read the annual report, which stated that all the contractors of the Potteries, Newcastle, and Leek, with the exception of three or four, were members of the Association. After noticing the settlement of the claims by the stonemasons and bricklayers, the report stated that the Workmen's Compensation Act, so far as the building trade was concerned, was most unsatisfactory. The slightest practical knowledge of the building trade on the part of those who framed the Bill would have saved endless litigation and unnecessary conflict with the injured workmen. The cost of insurance was now a serious matter, and to cover this an extra charge per hour on all labour had to be made. In contracts an item to cover this was provided as in fire insurance. The cost of building was thus increased by the new Act, and patient John Bull had to pay for all. There was no excuse for any employer to risk ruin to himself and workmen by not being insured. The workman had a right to see that his employer had insured him, and in seeking a new master would naturally satisfy himself that he would be covered by insurance. It was to the credit of the members of the Association that nearly all had insured their workmen. Their insurance company had met all claims from the district (which included two killed) in a speedy and satisfactory manner. The joiners and carpenters gave notice last month for a rise of wages and alterations in the working rules. The bricklayers gave notice to have no umpire in future. A meeting would be held this month of representatives of the employers and workmen to consider the notices, when it was hoped that satisfactory arrangements might be made so that the peaceful relations between them would be continued. A meeting of members would also be called soon to consider an extended price-list to embrace nearly all the items of the jobbing trade. They had been honoured by having their esteemed Treasurer, Mr. G. Ellis, elected Mayor of the county borough of Hanley. The arrangements commenced last year of members paying subscriptions *pro rata* had worked well, and after paying off the adverse balance of last year a substantial balance was left in the bank.—Mr. Walley proposed the health of the Mayor. His Worship responded, and said with regard to the building trade, with which he had been connected for thirty-six years, it was handicapped worse than any other trade he knew. Alderman Hammersley proposed "Success to the Building Trade and the Builders' Association." Mr. Gallimore responded, remarking that the Compensation Act had brought the builders together, and they found it to their interests to combine. Mr. Price gave the toast of "The Officers of the Association," coupling with it the names of Messrs. Smith, Cooke, and Bowden, who responded.

GLASGOW ARCHITECTURAL CRAFTSMAN SOCIETY.—The usual meeting of the Society was held at the rooms, 204, George-street, on Friday, 3rd inst., Mr. W. H. Baxter, Vice-President, in the chair. A discussion was opened by Mr. Isaac Low on "Building Deficiencies." As explained by him, he treated the subject principally from a craftsman's point of view and in a manner to raise discussion. Among the many heads for discussion given by Mr. Low may be mentioned: Insufficiency of Plans, Defects in Design, An Architect's Responsibilities, Cheap Work, Technical Training of all Craftsmen as well as Architects impossible, Moulding, Specifications, &c.

PROPOSED MEMORIAL TO THE LATE SIR JOHN MILLAIS.—His Royal Highness the Prince of Wales presided on Wednesday at a meeting of the Millais Memorial Committee, held by his Royal Highness's permission at Marlborough House. At the first meeting of the committee held last year at Marlborough House it was agreed that a memorial should be erected in St. Paul's Cathedral if a suitable place could be found, and a sub-committee was formed to visit St. Paul's and consult with the dean on the subject. The sub-committee having reported that the dean and chapter were strongly opposed to the erection of any memorial on the floor of the cathedral, and this decision having been confirmed by a subsequent letter from the dean, the committee after consideration came to the conclusion that their objections were insuperable, and that the idea of a memorial statue in St. Paul's must be abandoned. An alternative proposal of the sub-committee that a statue should be placed at the Tate Gallery was then considered, and a resolution was proposed by the Earl of Wemyss, and seconded by the President of the Royal Academy, that "a statue be erected in a prominent position in connexion with the National Gallery of British Art founded by Sir Henry Tate on the embankment at Millbank." This resolution was carried. It was further resolved immediately to invite contributions for carrying this object into effect. It is calculated that the amount required is from 1,500*l.* to 2,000*l.*

NEW VAUXHALL BRIDGE AND COMPENSATION FOR SEIZURE OF PREMISES.—An action arising out of the street improvements in connexion with the new Vauxhall Bridge was concluded on Wednesday before Mr. Under Sheriff Burchell, in the Sheriff's Court, Red Lion-square. The claimants, Messrs. Francis & Co., cement merchants and manufacturers, of Cliffe, Kent, and Vauxhall, sought to recover the sum of 40,000*l.* from the London County Council for the loss of business, stock, &c., by reason of the compulsory seizure of their premises, the Nine Elms Cement Wharf, for the new Vauxhall Bridge. The claimants estimated their annual profits at 8,800*l.* per annum, and claimed for three years' loss of trade. The special jury assessed the damages at 24,126*l.*, being 13,563*l.* for the leasehold premises, 9,643*l.* for damages to business, and 920*l.* for fixtures, &c. Judgment was given accordingly, with costs.

CAPITAL AND LABOUR.

TORQUAY BUILDING TRADE.—Torquay carpenters contemplate striking for more pay, the increase demanded being from 7d. to 7½d. per hour. Plasterers are still on strike for a rise in wages, and have been so for many months.

HALIFAX PLASTERERS' DISPUTE.—A dispute has arisen in Halifax between the plasterers and their employers. In May, 1898, a conference between the masters and the men took place, and a code of rules was agreed upon to operate amongst the men employed by the master plasterers of Halifax who are members of the National Association of Operative Plasterers, but before these rules have been in operation twelve months the men are asking, it is stated, for further concessions. The following letter has been sent to Mr. Thomas Foulds, the Secretary of the Masters' Association, recently:—Sir,—At a special summoned meeting of this branch it was decided to give our employers three months' notice for an advance of one penny per hour on our present wages, also for an alteration of working rules, as we think the present condition of trade warrants us in asking for a little more money. The following are the rules which we ask to be altered:—The first is Rule 2, which we want deleting. The second is in regard to Rule 3, which instead of reading on the third line that nine and a half hours be worked, it shall read that nine hours be worked. Also in regard to Rule 6, that the words—this rule does not apply to factory whitewashing—be struck out. Hoping they will meet with your favourable consideration, we remain, yours respectfully, the Committee.

ABERDEEN JOINERS.—The strike in this branch of the building trade is now over, having lasted just a week. The men originally demanded an increase in standard wages from 8d. to 8½d. per hour as from May 1. The matter has been compromised, and a rise of ¼d. is to be given on April 1, and another farthing five months after. The desired change in date of giving notice of alterations of by-laws and of the same coming into effect has also been agreed to.

LEGAL.

IMPORTANT POINT UNDER THE LONDON BUILDING ACT, 1894.

THE case of Drury *v.* Rickard came before a Divisional Court of Queen's Bench, composed of Mr. Justice Lawrance and Mr. Justice Channell, on the 6th inst. on the appeal of Mr. Drury from the decision of a Metropolitan Magistrate. It appeared that a complaint was made by Mr. Drury (the appellant) under the London Building Act, 1894, that the respondent, a builder, in erecting Abbey Mansions, Victoria-street (the north and south blocks), had in respect of certain things contravened the Act. The facts were shortly these:—The respondent was employed by Mr. C. J. C. Pawley, and was engaged on June 1, 1898, in erecting the south block of the building in question. It was erected to a greater height than 80 ft., without the consent of the London County Council, and, if the Act applied, in contravention of Section 47 of the Act. A notice of irregularity was served on the respondent, who claimed that, by reason of Section 202 of the Act, the building was exempt from the operation of the Act. Section 202 runs as follows:—"There shall be exempt from so much of the provisions of this Act as relates to buildings and structures . . . . any building, structure, or work vested in and in the occupation of any department of her Majesty's Government." The building was erected for and under the supervision of Mr. Pawley, who was acting as the architect of the building, but subject to the approval of the Surveyor of the Commissioners of her Majesty's Board of Works. The agreement between Mr. Pawley and the Commissioners was made on November 19, 1897, and Mr. Pawley, who was therein called the landlord, agreed to grant and the Commissioners agreed to take, a lease of a piece of land with the messuage therein described as then in course of erection, "for the term of twenty-one years from December 25, 1897, or so soon thereafter as the buildings should, in the opinion of the Office of Works, be fit for occupation." No such certificate had been given by the officers of the Office of Works, and the Commissioners had now refused to take the buildings. One of the officers of the Commissioners of Works had on several occasions during the building visited it and made suggestions. The appellant contended that the buildings were in the occupation of Mr. Pawley and not in that of any Government department, and, at any rate, would not vest in the Government until the commencement of the term of twenty-one years mentioned in the agreement. The magistrate held that the building in question came within Section 202 and was, therefore, exempt, and dismissed the complaint, but stated a case for the opinion of the Court upon the question whether the buildings were exempt. Other questions were raised before the magistrate, but their discussion did not become necessary if his view was right.

Mr. H. F. Dickens, Q.C., and Mr. Daldy appeared for the appellant, the District Surveyor of the London County Council, and Mr. Horace Avory and Mr. H. Marshall for the respondent.

Mr. Daldy contended that the buildings were not exempt, and that the respondent ought to have been convicted. He submitted that the Magistrate had gone wrong in thinking that the whole question turned upon the construction of the agreement, but did not consider the circumstances of the case, which showed that the Government were not in occupation. There was no vesting of the buildings in the Government, and the premises were occupied, if by anybody, by the builder.

Mr. Avory said that the exemption given by the Act could not apply at all if it did not apply to buildings in course of construction, because no Government department could enter into occupation until the building intended for it was completed. They might also be said to be in occupation by reason of the Government Surveyor coming in. His submission was that the building also was vested in the Government. The document was a lease in equity, and if the Commissioners could compel the grant of a lease, then the property vested in them. He contended that they could enforce a lease.

In the result Mr. Justice Lawrance said it was impossible to say that the "buildings were vested in, and in the occupation of, any department of her Majesty's Government;" and as it followed that these buildings were not vested in the Government department, the matter must go back to the magistrate so that he could decide the other points which he had not dealt with.

Mr. Justice Channell concurred.

Order accordingly.

FORTESCUE *V.* HYAM.

A "HOUSEBREAKER'S" ACTION.

ON Thursday last week, Mr. Verey, Officia Referee, tried this action, which was brought by Mr. Nathaniel Fortescue, housebreaker and excavator, of Hackney, against Mr. William Hyam, proprietor of the "White Horse" public house, Fetter-lane, City, for 72*l.*, the balance of the contract price for pulling down and clearing the site of the old "White Horse."

Mr. Powell appeared for the plaintiff, and Mr. Morton Smith (instructed by Mr. H. H. Richardson) for the defendant.

The principal point in the case was whether basement walls which retained the roadway were included in the description in the specification of "all walls," Mr. Fortescue setting up a custom in the trade that retaining walls were never pulled down unless actually specified, and that a provision for shoring the roadway should have been included if these walls had been intended to come down.

Considerable evidence was given by housebreakers on one side and surveyors, including Messrs. Cubitt & Collinson, Mr. T. Woodbridge Biggs, and Mr. Strudwick on the other, and in the result the Official Referee found against the alleged custom, and directed judgment to be entered for the defendant with costs.

CASES UNDER THE EMPLOYERS' LIABILITY ACT.

A SPECIAL sitting of the Romford County Court was held recently for the purpose of re-hearing the action, Green *v.* Carter, the jury at the trial of the case in the first instance being unable to agree. The plaintiff, Mrs. Sarah Maria Green, widow, of Hornchurch, formerly of Writtle, claimed 234*l.*, damages for the death of her husband through the alleged negligence of workmen in the employ of the defendant, Mr. William Carter, builder, of the Hermitage, Barkstone, Dorset.

Mr. C. E. Jones was for the plaintiff, and Mr. Macaskie and Mr. Cecil Walsh were for the defendant.—A jury was empanelled to try the case.

Mr. Jones said the action was brought under the Employers' Liability Act of 1880, and not the Act of last July. The facts of the case were briefly these: James John Green, a carpenter, was on December 14, 1897, employed by the defendant in connexion with the erection of certain houses on the Emerson Park estate, Hornchurch. On that day Green went into a partially-constructed house, on the roof of which a man was sawing rafters. This man, after sawing off a piece of wood about 3 ft. or 4 ft. long, allowed it to fall into the interior of the house, and Green was struck on the head by it, receiving such severe injuries that he died on December 24. The plaintiff's case was that the defendant should have provided a floor to catch the falling wood, or a hoarding to prevent it from dropping to the ground; and, further, he (Mr. Jones) contended that the man who was sawing the wood should, when the piece was about to drop, have called out to warn anybody who might have been passing below.

The jury found that Green was not required to be in the house, and it was not part of his duty to be inside the building; further, they found that Hammerton was carrying out his instructions when he cut off the timber, but they considered he showed great negligence; that warning ought to have been given; and that 100*l.* should be awarded as damages to the plaintiff.

His Honour, upon these findings, said he should enter judgment for the defendant, with costs.

AT the Wandsworth County Court, on the 1st inst., before his Honour Judge Vernon Lushington, Q.C., an action was brought under the Employers' Liability Act by Mrs. Mary Jane Hoddinot to recover damages in respect of the death of her husband, Benjamin Hoddinott, a labourer, of North-street, Wandsworth, who met his death by a fall from scaffolding in August last year. Mr. Moyses stated that the plaintiff's late husband was engaged with others in making alterations for the defendants at some stables in the Lower Richmond-road, and one day while lifting an iron fitting he fell from a scaffold to the ground below, a distance of 8 ft. 6 in. His skull was fractured, and he died shortly afterwards. The scaffolding, consisting as it did of boards laid across tall trestles, was, counsel contended, very unsafe, and showed negligence on the part of the defendants. Evidence was called to bear this out, and rebutting evidence was called to show that the scaffolding was safe. Eventually his Honour decided for the defendants, saying that the weight of evidence was on their side. Mr. Moyses then asked that an allowance should be made under the new Workmen's Compensation Act. Mr. Bower objected to this on the ground that the building in question was not 30 ft. high, as required by the Act. Evidence was given showing that the building was 28 ft. high to the top of the brickwork, and 36 ft. to the top of the roof, but his Honour overruled the objection. He decided to allow the plaintiff 245*l.* 15s.

DISPUTE OVER AN ARCHITECT'S COMMISSION.

AT the Wolverhampton County Court, on the 30th ult., before his Honour Judge Young, Mr. Ernest James Harthill, architect and surveyor, Wolverhampton, sought to recover from Arthur Lowder, of the "Swan Hotel," Brewood, the sum of 40*l.*, alleged to be due as commission for preparing plans, specifications, &c., of a brewery at Brewood. Mr. T. Dallow appeared for the plaintiff, and Mr. R. E. C. Kettle (instructed by Mr. Bevan) for the defendant. The evidence of the plaintiff showed that at the defendant's request he prepared plans, specifications, &c., in connexion with the erection of a brewery at Brewood, and contracted to do the work at 4 per cent. on the total cost, which amounted to 1,007*l.* The defendant paid him 15*l.* on account, but afterwards disputed the amount of the commission, stating that the plaintiff agreed to do the work at 1 per cent. commission. The defence was that the plaintiff agreed to accept 10*l.* down as commission. His Honour gave a verdict for the plaintiff for 25*l.*

THE NEW BRIGHTON TOWER COMPANY AND THEIR ARCHITECT:

MAXWELL *v.* NEW BRIGHTON TOWER COMPANY.

THE plaintiff in this case, which came before the Manchester Winter Assizes a few days ago, was Mr. F. W. Maxwell, architect, Manchester. The action was to recover a sum due to the plaintiff for services as an architect and for damages for wrongful dismissal.

Mr. Shee, in opening the case for the plaintiff, said that in 1895 Mr. Houston purchased for 30,000*l.* the Rock Point Estate at New Brighton for the purpose of erecting a tower and other buildings. Mr. Maxwell was entrusted with the task of preparing plans, and an agreement was made between him and a syndicate formed by Mr. Houston which ultimately became the present company. Under that agreement the plaintiff was to be paid 5 per cent. on the cost of the work executed. He was also to be paid for any additional work or deviations from the original plans, and he was to be entitled to receive the usual architect's commission from contractors. The original estimate of the cost of the works was 250,000*l.*, but after they had been in progress for some time the directors of the company cut down the cost by about 50,000*l.* The plaintiff claimed the commission agreed to on the work that was actually done, 2½ per cent. on the work that was abandoned, and reasonable remuneration in respect of additional work the company required him to do in the way of alterations on and additions to the original plans. The defendants disputed many of the items in the plaintiff's claim. They also alleged that he had demanded improper commissions from contractors, that he had been guilty of extravagant expenditure in the conduct of the works, and that he had supplied the company with misleading estimates. It was also alleged that the plaintiff neglected his work, leaving it too much in the hands of his assistants.

The Judge said the case involved a great number of small details, and he thought it would hardly be right to ask a special jury to spend perhaps two or three days in sifting them.

On receiving this expression of opinion from the Judge, counsel in the case had a conference, as a result of which,

Mr. Pickford said they had come to an arrangement to refer the whole matter to Mr. Taylor, Q.C. Part of the arrangement was that he should make a short statement to the court. The defendants would entirely withdraw a certain charge they made against the plaintiff, for which there was no ground. With regard to the question of the commissions the plaintiff was to receive from contractors or persons who supplied goods, they did not make any suggestion that the plaintiff was in any way bribed by them or that he had taken them unprofessionally. What the defendants did say was that he had received commission or remuneration from contractors to which, as a matter of law, he was not entitled under the agreement the Company made with him. As to the question of neglect of duty, they did not say, and never had said, anything against Mr. Maxwell's ability and competence. On the contrary, they thought when they engaged him, and they had thought ever since, that he was a gentleman of the highest competency. What they did complain of was that, whether owing to a pressure of other work or for other reasons, they did not get from Mr. Maxwell the continuous personal supervision and attention which they thought they were justified in expecting. Whether they were right in that opinion was a matter that would have to be decided afterwards; but that was the only kind of neglect they alleged against Mr. Maxwell. Mr. Pickford added that he agreed with his friends on the other side that it was only right that he should make these admissions on behalf of the defendants before the case was taken from the jury. —*Manchester Guardian.*

WORKMEN'S COMPENSATION ACT: LEEDS ARBITRATOR'S DECISION REVERSED.

THE first case of appeal from the decision of the Leeds arbitrator (Mr. Perks) under the Workmen's Compensation Act to the Leeds County Court Judge, came before Judge Greenhow, on the 3rd inst. The appeal was supported by Mr. A. Willey, who appeared for Sarah Ann Wood, of 7, Mario-place, Beeston-road, widow of John Wood, who, whilst engaged as a painter in the service of Messrs. W. Walsh & Sons, Wade-lane, was killed by the breaking of a rung of a ladder on which he was standing when painting the premises of Messrs. Potts & Son, Guildford-street, in September. The learned arbitrator had given his decision against the claimant, on the ground that the ladder (with a plank fixed from it to a window sill) was not a scaffold within the meaning of the Act, and that the operation in which the deceased was engaged was not repairing within the meaning of the Act. It was upon these points that the appeal was raised.

Mr. Hart (Manchester), who appeared for an insurance company, contended that the learned arbitrator was right in his ruling.

The Judge said he gave his decision on both points in favour of the workman. Whether the ladder was a scaffolding within the meaning intended by the Legislature he did not know, but it was one according to the dictionary definition, viz., "An elevated platform on which to work." If that was not a scaffolding he did not see where one could draw the line between a temporary structure and one more or less permanent. He also found, with much less doubt, that the operations in the way of painting were to be regarded as repairs.

Mr. Willey said they had agreed as to damages—237*l.* 10s.—and he asked for his Honour's award for that amount, with costs.

The Judge made the award, and directed a stay of execution for three weeks, to admit of further appeal.—*Yorkshire Post.*

AN ARCHITECT AND HIS FEES.

THE case of Tyler *v.* Renad came before Mr. Justice Bruce and a common jury last week, the hearing of which concluded on the 6th inst., it being an action brought by Mr. Robert Emeric Tyler, an architect, carrying on business in the City, against Mr. Charles Renad and Mr. Frederic Renad, acrobats, to recover 300*l.* in respect of fees for preparing the plans and drawings for a theatre at Tottenham. The defendants denied liability.

Mr. Maloney appeared for the plaintiff and Mr. Parkyn for the defendants.

The plaintiff's case was that on January 25, 1897, he was introduced to Mr. Frederick Renad, who informed him that he and his brother proposed to build a theatre at Tottenham, and asked whether he would act as architect. The plaintiff agreed to do so, and, in accordance with instructions which he received from Mr. F. Renad, he prepared the necessary plans and drawings, which had to be submitted to the District Council at Tottenham and the Middlesex County Council. The plans were passed by those authorities, quantities were taken out, and builders were invited to tender for the erection of the theatre; but eventually the scheme fell through, owing to the fact that the necessary money was not forthcoming. The plaintiff contended that he was entitled to recover from the defendants his fees at the rate of 3 per cent. on the lowest tender submitted.

The defendants, on the other hand, denied that they instructed the plaintiff to prepare the plans and drawings in question, and contended that if he prepared them at all, he did so at the request of the Albert Theatre Syndicate, Limited, which was formed for the purpose of purchasing the freehold of the Tottenham public hall and adjoining land, and erecting a theatre on the site. They further said that the plaintiff was a member of the Syndicate, and that his remuneration was dependent on the success of the scheme.

The plaintiff, in reply, said it was not true that he prepared the plans and drawings on behalf of the Syndicate. As a matter of fact, he did not hear anything about the Syndicate until some time had elapsed.

In the result the jury awarded the plaintiff 258*l.* 13s., being 2½ per cent. on the lowest tender submitted.

Judgment accordingly.

MEETINGS.

FRIDAY, FEBRUARY 10.

Institution of Junior Engineers (Westminster Palace Hotel).—Joint meeting with the Discussion Section of the Architectural Association. Paper on "Factory Design," by Mr. J. H. Pearson. 7.30 p.m.

Institution of Mechanical Engineers.—Annual General Meeting (concluded). 7.30 p.m.

Royal Institution.— Professor H. S. Hele-Shaw on "The Motion of a Perfect Liquid," illustrated by experiments. 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. W. Middleton on "The Electrical Driving of Engineering Workshops." 8 p.m.

Exeter Diocesan Architectural and Archæological Society.—Mr. Harbottle Reed on "Churches of Tintagel and Neighbourhood." 2 p.m.

SATURDAY, FEBRUARY 11.

Royal Institution.—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." I. 3 p.m.

South Kensington Museum (Lecture Theatre).—Mr. J. H. Pollen, M.A., on "Furniture." I. 3.30 p.m.

London and Provincial Builders' Foremen's Association.—Annual Dinner, Anderton's Hotel, Fleet-street. 6.30 p.m.

Edinburgh Architectural Association.—Visit to Cable Power Station, Tollcross.

MONDAY, FEBRUARY 13.

Royal Academy.—Lectures on "Greek Architecture," by Professor Aitchison, R.A. V. 4 p.m.

Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).—Mr. Basil Mott on "Building an Underground Railway." With lantern illustrations. 8 p.m.

Clerks of Works' Association.—Sixteenth Annual Dinner, King's Hall, Holborn Restaurant. 6.30 p.m.

Bristol Society of Architects.—Mr. Arthur Lee on "Marble Decoration."

TUESDAY, FEBRUARY 14.

Institution of Civil Engineers.—Messrs. Jeremiah Head and Archibald P. Head, on "The Lake Superior Iron Ore Mines, and their Influence upon the Production of Iron and Steel." 8 p.m.

Northampton Institute, Clerkenwell.—Lectures on Mediæval Architecture, by Mr. Francis Bond. VI. "The Dome at Home." 7.45 p.m.

Sheffield Society of Architects and Surveyors.—Mr. P. Marshall on "Surveying."

Perth Architectural Association.—Mr. W. Watson on "The Progress of Sanitary Science." 8 p.m.

WEDNESDAY, FEBRUARY 15.

British Archæological Association. — Professor McKenny Hughes on "The Fens." 8 p.m.

Society of Arts.—The Rev. J. M. Bacon on "The Balloon as an Instrument of Scientific Research." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

THURSDAY, FEBRUARY 16.

Royal Academy.—Lectures on "Greek Architecture," by Professor Aitchison, R.A. VI. 4 p.m.

Society for the Encouragement of the Fine Arts.—Mr. G. C. Haité on "The Elements of Design in Painting." 8 p.m.

Society of Antiquaries.—8.30 p.m.

Institution of Civil Engineers.—Students' visit to the works of the new Vauxhall Bridge. 2.30 p.m.

Civil and Mechanical Engineers' Society (Hotel Victoria, Northumberland-avenue, S.W.). — Mr. M. Holroyd Smith on "Electric Tramways." 7.30 p.m.

FRIDAY, FEBRUARY 17.

Architectural Association.—Mr. Cole A. Adams on "Colour Decoration." 7.30 p.m.

Glasgow and West of Scotland Technical College (Architectural Craftsman's Society). — "Notes on Building Materials," by Messrs. R. W. Horn and A. Davie.

SATURDAY, FEBRUARY 18.

Architectural Association.—Spring Visit to the Roman Catholic Cathedral, Ashley Gardens, Victoria-street, Westminster, by permission of the architect, Mr. J. F. Bentley. 3 p.m.

South Kensington Museum (Lecture Theatre).—Mr. J. H. Pollen, M.A., on "Furniture." II. 3.30 p.m.

Royal Institution.—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." II. 3 p.m.

Perth Architectural Association. — Visit to Wilson U.P. Church, New Scott-street. 2.30 p.m.

RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

Open to Opposition until April 1.

[1897.] 24,446, J. B. & Lucy Heal, Low-pressure Automatical Acetylene Gas Generator. 27,569, Earnshaw, Sash Fasteners. 30,284, Adams, Hot and Cold Water Taps. [1898.] 1,758, Bromhead, Fireproof Roofs and Floors. 1,774, Webb, Cooking Ranges and Stoves. 1,831, Bous-

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*House	Doncaster Grammar School Trustees	50*l.* and 25*l.*	Mar. 30
*Concrete Hall, Reading Room and Lavatories	Ramsgate Corp.	50*l.*; 20*l.*; and 10*l.*	Mar. 31
*Market Hall and Shops	Leeds Corp.	150*l.*; 100*l.*; and 50*l.*	June 1
*Vagrant Wards	Hexham Union	20*l.*	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Excavation of Site of Electric Lighting Station	Hammersmith Vestry	H. Mair, Town Hall, Hammersmith, W.	Feb. 13
*Materials, &c. (various)	Hendon U.D.C.	S.S.Grimley, Public Offices, Hendon, N.W.	do.
*Show Yards	Somt. Cty. Agric. Ass.	A. Cottom, Bridgewater	Feb. 14
*Supplies (various)	Cty. Boro. of West Ham	See Advt.	do.
Granite Road Metal, &c.	Doncaster R.D.C.	F. E. Nicholson, Union Offices, Doncaster	do.
Four Villas, Exmouth	H. Blackmore	P. Kerley, Archt. Exmouth	do.
Alterations, &c. 13, Charlotte-st. Hull	.....	T. B. Thompson, Archt. 15, Parliament-st. Hull	do.
Oddfellows' Hall, Hull	Committee	do.	do.
Two Houses, Hilderthorpe, nr. Bridlington Quay	F. Shaw	J. Earnshaw, Archt. Bridlington Quay	do.
Sewerage Works	Caerphilly U.D.C.	A. Harpur, C.E. Council Offices	do.
House and Shop, Wagonway-road, Alnwick	.....	J. Purvis, 16, Bridge-st. Alnwick	do.
*Road Making (Honor Oak Park)	Lewisham B. of W.	Surveyor's Dept. Town Hall, Catford	do.
*Road Making (Westwood Park)	do.	do.	do.
*Works and Materials	Hampstead Vestry	Surveyor, Vestry Hall, Hampstead	Feb. 15
Flagging, &c.	Bristol Corp.	T. H. Yabbicom, C.E. 63, Queen-sq. Bristol	do.
Additions to Workhouse	Hailsham R.D.C.	Mitchell & Ford, Archt. 2, Langney-rd. Eastbourne	do.
Street Works, Railway-st.	Nelson (Lancs.) Corp.	B. Ball, C.E. Town Hall	do.
Two Walls, Road Works, &c. Cliff-st. Cheddar	Axbridge R.D.C.	G. Cook, Surv. Axbridge	do.
Road Materials	Stockport Corp.	J. Atkinson, C.E. Boro Surveyor	Feb. 16
Sewer, Strand-road	Bray Township Commissioners	P. Comber, C.E. Town Hall Bray (Ireland)	do.
Factory, Barton-st. Bristol	E. Brodrick & Co.	H. Williams, Archt. 24, Clare-st. Bristol	do.
Stable Offices, Alves, near Elgin, N.B.	.....	Reid & Wittet, Archt. Elgin	do.
Water Supply Works, Upton	Caldbeck Parish Council	G. Watson & Son, Engr. 3, St. Andrew's-place, Penrith	do.
Sewerage Works	Southend Corp.	A. Fidler, C.E. Clarence-road, Southend	do.
*Billiard Room, Concert Hall, &c. at Club	Leyton (Essex) Progressive Club	The Club House Pioneer Lodge, Church-road, Leyton	Feb. 17
Making-up 14 Streets	Bexhill U.D.C.	G. Ball, C.E. Town Hall	do.
Police Station, Halesowen	Worcester C.C.	H. Rowe, County Surv. Worcester	do.
Cottage, Woodhouse Moor	Leeds Corp.	City Engineer, Municipal Buildings	do.
Additions to Baths	Darlington Corp.	Boro Surv. Town Hall	do.
Footpaths, Walverden Park	Nelson (Lancs.) Corp.	B. Ball, C.E. Town Hall	do.
Boundary Walls, &c.	Nottingham Corp.	A. Brown, C.E. Guildhall, Nottingham	do.
*Twelve Houses, and Dwelling House and Shop	.....	Morgan, Baines, & Clark, Sutton, Surrey	Feb. 18
Sewers, Banchory, N.B.	.....	Jenkins & Marr, Archt. 16 Bridge-st. Aberdeen	do.
Slag and Granite	Oundle R.D.C.	N. E. Dixon, Surv. Oundle	do.
Wesleyan Church, Ladybarn, Manchester	.....	Greaves & Burbridge, Archt 1, Harrington-st. Liverpool	do.
Additions to Police Station, Helmsley	.....	W. Stead, County Surv. Northallerton	do.
Church Works, Kilbarchan, N.B.	.....	W. H. Howie, Archt. 131, West Regent-st. Glasgow	do.
Villa, Bradshaw, near Halifax	J. Patchett	W. C. Williams, Archt. 29, Southgate, Halifax	do.
Road Materials	Glam. C.C.	T. L. Edwards, County Surv. Town Hall, Bridgend	do.
Sewers	Evesham R.D.C.	H. S. Harvey, Albert-rd. Evesham	do.
*Artisans' Dwellings	Southampton Corp.	Municipal Offices	Feb. 20
Chapel	Chartham Parish Council	A. Bromley, Archt. Cathedral Precincts, Canterbury	do.
*Sewage Disposal Works	Staines U.D.C.	J. C. Mallias, 264, Gresham House, Old Broad-street, E.C.	Feb. 21
Stone and Gravel	Salisbury R.D.C.	D. W. Morrice, Surveyor, Homington, Salisbury	do.
Additions to Schools, Barn-st.	Haverfordwest Sch. Bd	D. E. Thomas, Archt. Victoria-pl. Haverfordwest	do.
Flags, Kerbing, &c.	Bury (Lancs.) Corp.	J. Cartwright, C.E. Bury	do.
Sewers, Dunham Massey	Bucklow R.D.C.	J. M'Kenzie, Surv. 7, Market-st. Altrincham	do.
*Works and Services (various)	Battersea Vestry	J. T. Pilditch, Vestry Hall, Lavender Hill, S.W.	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Granite Setts (950 tons)	Clayton-le-Moors U.D.C.	A. Podgeon, Surv. Council Offices	Feb. 22
Additions to Sewage Works	Gorton (Lancs.) U.D.C.	C. J. Lomax, Engr. 37, Cross-st. Manchester	do.
Bridge over River Sawdde, Llangadock	Llandovery R.D.C.	M. W. Davies, C.E. Gloucester-place, Swansea	do.
Warehouse, West Vale, Halifax	.....	Horsfall & Son, Archt. Halifax	do.
Hospital Block	Workington Corp.	W. Eaglesfield, Boro. Surv. Town Hall	do.
Sewerage Works	Ramsbottom U.D.C.	J. W. Barlow, Market-pl. Ramsbottom	do.
*Road Making and Paving	Fulham Vestry	C. Botterill, Town Hall, Walham Green, S.W.	do.
*Works and Materials	Hackney Vestry	J. Lovegrove, Town Hall, Hackney, N.E.	do.
Three Houses, Hipperholme	.....	R. Berry, Archt. Commercial-st. Halifax	Feb. 24
Granite, &c.	East Sussex C.C.	F. J. Wood, C.E. County Hall, Lewes	Feb. 25
Road Materials	Horncastle R.D.C.	J. E. Chatterton, Council Offices	do.
Sewerage Works	St. Annes-on-Sea U.D.C.	B. Bancroft, C.E. 88, Moseley-st. Manchester	do.
*Works and Repairs	Commrs. H.M. Works	Office, Storey's Gate, Westminster	do.
Electric Lighting Extensions	Wolverhampton Corp.	J. W. Bradley, C.E. Town Hall	Feb. 27
Reservoir	Merthyr Tydfil U.D.C.	T. F. Harvey, Engr. Town Hall	do.
Church Works, Llantwit Major, Glam.	.....	G. E. Halliday, Archt. Cardiff	do.
Two Cottages, St. Erth, Cornwall	G. W. Ry. Co.	G. K. Mills, Paddington Station, W.	Feb. 28
Water Supply Works	Wakefield Corp.	C. C. Smith, C.E. Town Hall	do.
*Stabling, and Horse Keeper's Residence	Woolwich Local Board of Health	J. A. Cook, 1a, Eleanor-rd. Woolwich	do.
*Two Cottages	L.C.C.	Engineer's Department, County Hall, Spring Gardens, S.W.	do.
Hotel, Hebden Bridge	Halifax Brewery Co.	W. C. Williams, Archt. 29, Southgate, Halifax	Feb. 29
*Cement Ballast, York Paving, &c.	St. Saviour's B. of W.	G. R. Norrish, Offices, Emerson-st. Bankside, S.E.	Mar. 1
Storage Reservoir, Nant-y-gelfr	Llanidloes T.C.	F. Beesley & Son, Engr. 11, Victoria-st. S.W.	do.
*Infirmary at Workhouse	Congleton Union	Master at Workhouse, Arclid	do.
*Works and Repairs in Hampton Court, Kew and Richmond Districts	Commrs. H.M. Works	Offices, Storey's Gate, Westminster	Mar. 2
Schools	Sowerby Bridge S.B.	Horsfall & Son, Archt. Lord-st. Chmbrs. Halifax	Mar. 3
*Services and Materials (various)	Bermondsey Vestry	F. Ryall, Town Hall, Spa-road, S.E.	Mar. 4
Additions to Schools, Abergwynfi	Glyncorrwg Sch. Bd.	O. P. Lambert, Archt. Bridgend	Mar. 7
*Underground Convenience also Asphalt Works	Camberwell Vestry	W. Oxtoby, Vestry Hall, Camberwell	See advt.
*School	Asker Haberdashers' Schools	Widnell & Trollops, 20, Tothill-st. S.W.	No date
*Painting and Decorating	Trustees Grand Stand, Ascot	W. Menzies, Englefield Green, Surrey	do.
Alterations to Premises, Scotch-st. Armagh	F. Mitchell	J. F. Gilchrist, Archt. Scotch-st. Armagh	do.
Schools, Hatfield Heath, Essex	.....	Brown & Barrow, Archt. 12, Norfolk-st. W.C.	do.
Rebuilding Queen's Arms Inn, Barrow	Worthington & Co. Ltd.	E. M. Young, Archt. 90, Duke-st. Barrow-in-Furness	do.
Additions to National Schools, Morecambe	.....	Marshall Bros. Archt. Back-crescent, Morecambe	do.
Shops, &c. Poynton, nr. Stockport	.....	F. W. Dixon, Archt. Trevelyan-bldgs. Manchester	do.
Restaurant, North Albert-st. Fleetwood	R. Leadbitter & Sons	T. A. Drummond & Sons, Archt. Fleetwood	do.
Street Works, Ashley-gdns. Belfast	.....	D. M'Gonigal, 10, Donegall-st. Belfast	do.
*Hard or Rough Flag, or Suitable Rock	Diamond Stone Working Co. Ltd.	The Company, Burnley	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Engineer and Surveyor	Harrow-on-the-Hill U.D.C.	160*l.* rising to 200*l.* per an.	Feb. 13
*Inspector of Nuisances	do.	130*l.* per annum	do.
*Foreman (Hardwood Paving)	Hackney Vestry	37*l.* 5*s.* per week	*o.
*Architectural Assistant	Oldham Corp.	150*l.* per annum	Feb. 14
Surveyor	Woodbridge (Suffolk) R.D.C.	200*l.* per annum	do.
Surveyor	Ely R.D.C.	100*l.* per annum	Feb. 15
Surveyor	Wisbech R.D.C.	140*l.* per annum	Feb. 16
*Building Inspector	Tottenham U.D.C.	150*l.* per annum	Feb. 20
*Sanitary Inspector	Chelsea Vestry	120*l.* rising to 180*l.* per an.	Feb. 24
*Bricklaying Instructor	L.C.C.	2*l.* 10*s.* rising to 3*l.* per week	Feb. 25
*Superintending Architect	do.	2,000*l.* per annum	do.

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments, pp.* xix. & xxii.

field, Grooved Rails for Sliding Doors. 1,966, Gammie, Window Frames and Sashes. 1,982, Waller, Attachment and Detachment of Metal Doors or Covers of Frames for Inspection Chambers and other Appliances employed for Sanitary and other purposes. 1,990, Jacques, Lathes. 2,384, Holbrook & Harding, and 6,128, Ackroyd & Best, Miners' and other Safety Lamps. 2,541, Piper, Power Mortising Machine. 3,228, Sanderson, Acetylene Lamps for Lighting and Heating. 3,280, Taylor & Hollick, Mills for Cement, &c. 3,866, Shanks, Syphon Flushing Apparatus. 4,050, Cowan and Coley, Ladder Steps. 4,051, Buggé, Means for Preventing the Spread of Fire. 5,061, Thompson, Shaping and Ornamenting Wood and other yielding Materials by Pressure. 5,336, Barralet, Regulating the Supplies of Gas and Water to "Geysers." 5,538, Dedecker, and 26,862, Gardner & Kelly, Acetylene Gas Apparatus. 6,006, Percival, Acetylene, Hydrogen, and similar Gas Generators. 6,522, Walsh, Burners and Globes. 6,677, Smith, Asquith, & Asquith, Safety Doors and Gates for Hoists. 6,773, Stewart, Street Lanterns for Incandescent Electrical Lamps. 6,926-7, J. Duckett & Son, and others, Waste-water Preventers and Traps for Soil Pipes. 7,284, Burgess & Burgess, Catches, Fastenings, and other Furniture for Windows, Doors, &c. 7,503, Cox & McTaggart, Refuse Destructors. 8,320, West & Hodges, Circular Saw Guard. 9,929, Pusill & Featherby, Method of Tubing Artesian Wells. 14,162, Whittaker & Bryant, Purification of Sewage. 19,637, Thomas, Syphoning and Flushing Apparatus for Lavatory Wash Basins. 20,492, Thom, Folding Wheelbarrows. 20,842, Streubel, Gas Cocks for Street Lamps. 22,846, Sagendorph, Metallic Ceiling and Wall Plates, and Means of Securing them to Metallic Beams. 21,742, Swift, Furnaces for Brick Kilns, &c. 22,347, Miller, Walls for Grain Storage Bins, &c. 23,389, Sapy and others, Water Meters. 24,283, Juhasz, and 25,199, Rammoser, Röhrs, & Röhrson, Automatical Gas Igniters for Incandescent Mantles. 25,218, Ham, Baker, & Sansom, Street Gully and Similar Gratings. 25,259, Obst, Electrical Speed Indicators. 25,726, Brown, a Vice. 26,545, Küpper, Walls and Wall Plates or Slabs. 26,879, Dimmitt, Ball Bearing Castor. 27,007, Ottesen, Arc Lamps. 27,103, the E. Ingraham Co., Sashes or Glazed Doors for Clock Dials. 27,324, Crane, Illuminated Clocks.

ABSTRACTS OF PATENTED INVENTIONS.

22,167.—DRY CLOSETS AND DEODORANTS: *D. O'Brien.*—For a range of closets a pan, having a perforated bottom, whereon rests a layer of filtering material, is placed beneath each seat, and is furnished with a receptacle for liquid and a conducting tube. Pipes convey the liquid, flowing into a trough, to a pit containing ashes mixed with a disinfectant. A series of hoppers, filled with some absorbent material, is supported by a bar mounted in bearings in the end walls, and fitted with an operating lever, which at intervals swings the hoppers backwards, allowing them to fall, so that each strikes the back of the seat and discharges part of its contents into the pan below. For a single closet the hopper is moved by means of a chain, and bars carry the pan over a pit; or the hopper may be connected to a movable seat. For a deodorising compound may be mixed ½ ton of dry night-soil, 18 cwt. of ashes, 5 lbs. of ground charcoal, 1½ lbs. of permanganate of potash, 1 lb. of gypsum, and 2½ lbs. of alum; ½ oz. of izal in a quart of boiling water is sprinkled over the ashes.

22,170.—SYSTEMS OF LIGHTING: *W. G. Inglefield.*—The contrivance, adapted for use in store-rooms, corridors, hospitals, mines, factories, and so on, and applicable for gas, oil, or electrical lamps, comprises a carrying wire which is stretched lengthwise and has sliding bobbins wherefrom india-rubber cords suspend the lamps. Conducting wires hang from the main wire by hooks, and are coiled around the india-rubber cords so that the lamps can be pulled down as may be desired.

22,205.—WATERPROOFING ROPES, FABRICS, &c.: *A. L. Kennedy.*—With the strands or threads of the rope or fabric are combined, during the process of twisting, spinning, or weaving, other strands of nitrocellulose or acetate of cellulose, the application of a solvent causes the cellulose to impregnate the fibre or threads, and to thus make the material waterproof.

22,220.—WATER-WASTE PREVENTING SYPHON DISCHARGE: *F. Wangelin.*—The flush is started by lowering the bend of the syphon, which is adapted to slide within the discharge-pipe, the bend is lowered by a contrivance whereby the pull-chain rotates a sleeve upon the shaft and together with it an arm which carries a disc. A pin upon

the disc engages with one end of a weighted arm, whose other end supports the syphon, and in raising it lets the syphon fall.

22,223.—CLEATS OR HOLDERS FOR ROPES, CORDS, &c.: *E. F. Hartshorn.*—A swinging frame embraces the pulley, at each side whereof is a notched hub; pawls are adjusted to engage in the notches of the hubs, and in doing so cause the frame to be swung up as the load descends, when the cord or rope becomes jammed; to lower the load, the rope must first be freed by lifting the load a little that the pawls may rise out of the notches; in lowering or raising the load the pawls do not engage in the notches, owing to the rapid rotation of the hubs.

22,252.—FASTENINGS FOR WINDOW BLINDS OR SHUTTERS: *H. Spencer.*—To secure shutters or blinds, when opened, a lever on the lower hings is pivotted to that portion of the hinge which is secured to the frame or wall; on the shutter stile is an inclined block, over which the lever is turned, in order to keep the shutter close against the wall, the hinge-plate is flanged or slotted to strengthen the lever in its horizontal, or fixed, position, so that the lever's inner end may engage with the slot or flange.

22,273.—LIGHTING AND EXTINGUISHING OIL LAMPS: *E. Weinhagen.*—For lamps whose wick is lighted by hydrogen gas, which is ignited by its impinging upon spongy platinum, the gas-vessel is detachably connected by means of tubing with the arms which carry the hydrogen jet and the platinum igniter. The arms may be mounted so as to be raised to the wick's level at the moment of lighting, and to be lowered when the gas supply is cut off by means of the release of a spring or self-closing valve. A ball or air-pump extinguishes the flame.

22,282.—PARALLEL RULERS: *J. H. Stone.*—On one part of the ruler is a guide or straight-edge, beneath which passes a measuring rule, which is attached to the other part of the instrument. Thus the distance between two ruled parallel lines can be set out. The measuring rule may be attached in various places, and may be turned out of the way when a long rule is used.

22,303.—FIXING THEIR HANDLES IN HAMMERS, PICKS, BROOMS, &c.: *J. R. Smith.*—A taper plug made to fit into an axial hole bored in the handle expands the handle when put into the taper socket of the head of the tool when the handle is driven in; a pin fits into slots cut transversely in the handle's end, and its pressure outwards will enable the handle to be removed; in lieu of a pin a flange may be formed upon the thick end of the plug.

22,315.—MOULDING BRICKS, &c.: *D. Black.*—A hopper feeds clay into the moulds, which are arranged radially in a rotating cylinder, and the plungers have rollers that run upon a fixed cam, transverse slides having pins or projections for running in a fixed cam-groove, close the moulds for pressing, and are again withdrawn before the moulds begin to discharge their contents; a cam and lever acting upon inner projections of the plungers force the bricks downwards on to a travelling band; a weight on a lever raises a plunger before its inner projection leaves the fixed cam-groove of the lever, whilst a fixed cam keeps the lever in position until the mould is again filled from the hopper.

22,328.—LINTELS FOR DOORS AND WINDOWS: *H. Mason.*—The lintels, of cast metal, and built into the wall, have ornamental fronts, and have recesses in which doors and windows can be raised for their removal; recessed plates hold the window or door when it is lowered into a position between them; the lintel may be cast in one piece, or flanges may be bolted to the face-plate and to one another.

22,417.—DRAIN-TRAPS: *A. G. Mitchell & J. A. Bolger.*—A weighted flap-valve closes the lower end of a pipe which hangs down from the grating; around the pipe's upper end is placed (upon a diaphragm) some disinfecting material through which the gases pass to the apertures of the grating.

22,428.—WASTE WATER-CLOSETS AND FLUSHING: *L. Ashworth & J. Taylor.*—A trap is formed by the dipping into the seal of an annular flange made upon the basin, whilst the dished top of a central pillar prevents obstructions from passing into the drain; a ring that can be turned to any angle at the joint forms a connexion between the tipper and the vessel containing the trap.

22,467.—FRET-SAW BLADES: *Hobbies & H. Jewson.*—By means of a screw-clamp which consists of a thumb-screw and a strap, the saw-blades are secured in fret-saw frames, the strap engages with a notch in one arm, and the screw bears on the other arm of the clamp—the arms having roughened faces for holding the saw-blade; the arms may also be formed in one piece screwed with the tension device as in No. 17,006 of 1897.

22,487.—PLUG COCKS: *D. Sugden.*—The inventor's object is to prevent jamming in the cock; he forms the plug in two portions between which he puts spiral and ring springs, the former springs are kept in position by pegs, and a spindle, whose extensions engage with grooves in the plug, actuates the valve, the cap of the cock serves as a stuffing-box, containing a loose packing-gland which a screw-gland holds down.

22,526.—GLAZING FOR ROOFS, DOMES, WINDOWS, FRAMES, &c.: *S. Carlisle (J. R. Carlisle's Administratrix).*—To the rafter is secured a bedding strip of lead, soft metal, or composition, and a rabbeted round-backed cover-plate, screwed on to the rafter, holds the sheets of glass in their places; joints are rendered air and water tight with cement, and the glazing bars are fashioned with a thickened centre for strengthening purposes.

22,662.—FILTRATION OF SEWAGE: *B. Harlow.*—The sewage-tank has walls made of two rows of iron bars, between which the filtering medium is placed, the medium consisting of peat, sand, coke-breeze, &c.; a cast-iron floor, made in segments, carries the bars. To facilitate drainage of water from the sludge, the spaces between the bars reach down to the floor, and pipes or openings, controlled by valves, are formed in the bottom of the tank.

22,681.—LAVATORY BASINS: *J. Shanks.*—A rectangular rubber-cushioned frame, bolted to the wall and supported by struts, carries the basin; the supply enters the valve-box through valves attached upon spindles and closed, normally, by springs; the valve-spindles are connected by rods with treadles, pivotted to a wall-plate; the mixed hot and cold water passes from the mixing-chamber through a pipe to the flushing-scroll, and the basin is bolted to the waste pipe, which is trapped at its upper end.

22,741.—STONE-PRESERVING COMPOSITION: *A. A. Dickson.*—In order to obviate disintegration of the material by blasting operations, the gypsum or similar hydrated rock is mined by sawing or channelling machinery; the blocks, after having been shaped or turned to the form desired, are dried by hot air; when slowly cooled, they are immersed in a solution of ammonia alum, then dried in open air, and polished. The solution may be coloured with chrome or iron alum.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/10/0 15/10/0
Sequoia, U.S.ft.cu.		1/9/0 2/0/0
Ash, Canada, load		3/17/6 5/5/0
Birch, do.		3/0/0 5/0/0
Elm, do.		4/12/6 5/15/0
Fir, Dantsic, &c.		2/0/0 4/0/0
Oak, do.		3/5/0 3/15/0
Canada		4/0/0 6/0/0
Pine, Canada red.		0/0/0 0/0/0
Do. yellow		4/7/6 6/5/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg.		4/0/0 6/10/0
Wainscot, Riga, &c., log		3/15/0 5/15/0
Odessa, crown		3/15/0 5/15/0
Deals, Finland 2nd & 1st std. 100		9/15/0 10/5/0
Do. 4th & 3rd		9/15/0 10/5/0
Do. Riga		8/5/0 9/5/0
St. Petersburg, 1st yellow		11/15/0 14/5/0
Do. 2nd yellow.		10/15/0 12/5/0
Do. white		9/15/0 11/15/0
Swedish		9/15/0 16/15/0
White Sea		10/15/0 18/0/0
Canada, Pine 1st		18/15/0 25/5/0
Do. do. 2nd		13/15/0 17/0/0
Do. do. 3rd, &c.		6/0/0 10/0/0
Do. Spruce, 1st.		8/10/0 10/10/0
Do. do. 3rd and 2nd		7/5/0 8/10/0
New Brunswick		7/5/0 8/0/0
Battens all kinds		5/0/0 16/0/0
Flooring boards, sq., 1 in., prep. 1st		9/6 16/3
Do. 2nd		8/0 13/3
Other qualities—		6/3 7/0
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/3½ /4½
Mahogany, Cuba.		/5½ /7
St. Domingo, cargo av.		/5 1/3
Mexican, do. do.		/3¾ /4
Tobasco, do. do.		/4 /6½
Honduras, do.		/4 /6
Box, Turkey, ton.		4/0/0 15/0/0
Rose, Rio		7/0/0 14/0/0
Bahia		6/0/0 12/0/0
Satin, St. Doming.		/5 1/0

TIMBER *(continued)*.		
Satin, Porto Rico		0/0/9 0/2/0
Walnut, Italian		0/0/3 0/0/7
METALS.		
Iron—Pig, in Scotland	ton	2/14/10 0/0/0
Bar, Welsh, in London		6/0/0 6/5/0
Do. do. at works in Wales		5/15/0 5/17/6
Do. Staffordshire, in London		6/5/0 7/10/0
COPPER—British cake and ingot		76/10/0 77/0/0
Best selected		77/0/0 77/10/0
Sheets, strong.		80/0/0 82/0/0
Chili bars		72/2/6 0/0/0
YELLOW MTL.	lb.	7d. 7½d.
LEAD—Pig Spanish	ton	15/10/0 0/0/0
English com. Brands		15/15/0 0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards		16/15/0 0/0/0
Pipe		17/5/0 0/0/0
ZINC—English sheet	ton	29/10/0 0/0/0
Vieille Montagne		31/0/0 0/0/0
Spelter		27/0/0 27/5/0
TIN—Straits		109/15/0 0/0/0
Australian		110/0/0 111/0/0
English Ingots.		113/10/0 114/10/0
Banca		0/0/0 0/0/0
Billiton		0/0/0 0/0/0
OILS.		
Linseed	ton	17/7/6 0/0/0
Cocoanut, Cochin		27/15/0 0/0/0
Do. Ceylon		24/10/0 0/0/0
Palm, Lagos		21/15/0 0/0/0
Rapeseed, English pale		22/15/0 0/0/0
Do. Brown		21/5/0 0/0/0
Cottonseed ref.		15/0/0 16/0/0
Oleine		17/0/0 18/0/0
Lubricating U.S.		0/5/3 0/7/6
Do. Black		0/5/0 0/6/6
TAR—Stockholm	barrel	1/5/0 0/0/0
Archangel		0/18/0 0/0/0
Turpentine		31/5/0 0/0/0

TO CORRESPONDENTS.

A. H. (amounts should have been stated).—J. W. P. (none of the words quoted in your letter were used at all in this journal).—D. H. B. (too late).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

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Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

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TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BANBURY.—Accepted for the supply of Hartshill stone for the Town Council. Mr. N. H. Dawson, C.E., Town Hall, Banbury:—

	s.	d.
Tees Hartshill Granite and Brick Company, Limited, Hartshill	6	8

[Per ton Hartshill Block stone].

BANBURY.—For reconstructing the public swimming-bath, for the Town Council. Mr. N. H. Dawson, C.E., Town Hall, Banbury:—

J. S. Kimberley	£1,478	Orchard & Son, Banbury*	£1,393

* Accepted.

CARDIFF.—For extensions to electric lighting station, Eldon-road, for the Corporation. Mr. W. Harpur, M.Inst.C.E., Borough Engineer, Town Hall, Cardiff. Quantities by the Engineer:—

Jones Bros.	£4,924	T. Maggs	£4,442
J. Allan	4,880	Rees & Thomas	4,363
W. H. Ingleson	4,879	E. Turner & Sons	4,288
Thomas & Co.	4,700	Lattey & Co.	4,287
W. Symonds & Co.	4,640	J. L. Chubb & Co.*	4,084

[All of Cardiff.]

* Accepted.

CHELTENHAM.—For the reconstruction of No. 3, reservoir, Hewletts, for the Corporation. Mr. Joseph Hall, Borough Surveyor, Municipal Offices, Cheltenham:—

C. H. Channon & Son	£2,690	C. Malvern & Sons, Cheltenham*	£1,854
W. L. Meredith	2,495		
Collins & Godfrey	1,995		

* Accepted.

CHERTSEY.—For the erection of four villas for Messrs. Paine & Brettell. Mr. Charles Welch, architect:—

Watson	£3,564 0	Martin	£3,175 0
Grey	3,191 0	Hunt	2,894 0
Greenfield	3,177 19	Buckeridge	2,879 0

EAST BEDFORD.—Accepted for the erection and completion of three shops. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road, S.W.:—

W. T. Herbert £1,350

FAREHAM.—For the extension of County Asylum, Fareham, Hants. Mr. W. J. Taylor, County Surveyor, architect:—

C. Ford	£16,396	Cooke & Co.	£14,890
Stephens, Bastow, & Co.	15,986	Jenkins & Son, Bournemouth*	14,344
Light & Son	15,793		
J. H Cooke	15,200		

* Accepted.

FELIXSTOWE.—For the erection of a villa, for Mr. F. C. Robinson, London. Mr. G. W. Thompson, architect, Granville House, Arundel-street, London, W.C. Quantities by Mr. E. C. Pinks, 45, Parliament-street, S.W.:—

E. West	£1,663	F. C. Thurman	£1,475
H. Linzell	1,495		

LEYTON.—For the first portion of stores and workshops to be erected in Church-road, Leyton, Essex, for the London Electric Wire Co., Limited. Mr. A. W. Hudson, architect, 42, Bishopsgate-street-within, London, E.C. Quantities by Mr. W. Shornicraft, 6, South-square, Gray's Inn, W.:—

W. Shurmur	£11,475	H. Brown	£9,979
E. Lawrence & Sons	10,532	S. G. Scott, Bloomfield-street, E.C. (accepted)	9,868
F. & F. H. Higgs	10,285		
T. Goodall	10,147		

LONDON.—For the erection of cottages on Plot 2 of the Brook-street, Limehouse, scheme, for the London County Council:—

W. Downs	£5,980	J. Brown, Son, & Blomfield	£5,029
F. & F. J. Wood	5,250	Leslie & Co., Limited	4,987
J. Chessum & Sons	5,221	R. A. Yerbury & Sons	4,848
Holloway Bros.	5,044		

LONDON.—For No. 12 and No. 1, Belgrave-square, S.W., for Mr. Wm. Tebb. Mr. Philip A. Todd, architect:—

—	New House and Alterations to Stables.	Alterations and Decorative Works, and Alterations to Stables.	Total.
	£ s. d.	£ s. d.	£ s. d.
T. Stevens	6,378 0 0	4,860 0 0	11,238 0 0
T. Gregory & Co.	5,987 0 0	5,097 0 0	11,084 0 0
W. H. Lascelles & Co.	6,111 0 0	4,723 0 0	10,834 0 0
J. Cannon	6,053 6 9	4,601 11 5	10,654 18 2
W. H. T. Kelland	5,995 0 0	4,234 0 0	10,229 0 0
Spiers & Son	5,795 0 0	4,173 0 0	9,968 0 0
Edwards & Medway	5,479 0 0	4,171 0 0	9,650 0 0
R. S. Buckeridge	5,225 0 0	3,750 0 0	8,975 0 0

LONDON.—For the construction of pipe sewers, for the Ealing Urban District Council. Mr. C. Jones, C.E., Public-buildings, Ealing, W.:—

F. Adams	£6,972 0 0	C. Ford	£6,480 0 0
J. Macklin	6,890 0 0	R. Ballard	6,374 0 0
Nowell & Co.	6,677 3 4	Neave & Son	6,221 0 0
Wilkinson	6,600 0 0	H. M. Morecroft, Acton Green*	5,996 0 0
Wimpey & Co.	6,543 0 0		

* Accepted.

LONDON.—For the erection of a Public Reading Room at Kensal Rise, N.W. Messrs. Done, Hunter & Co., architects and surveyors, Cricklewood, N.W.:—

H. C. Clifton	£1,425	G. Neal	£1,149
Marchant & Hirst	1,415	G. Wheeler	1,149
Godson & Sons	1,330	F. T. Chinchen	1,094
J. Christie	1,220	Yerbury & Sons	1,044
General Builders	1,150		

LONDON.—Accepted for decorations at 77, Redcliffe Gardens, Earl's Court, S.W. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road, S.W.:—

Simmond Bros., South Kensington £125

LONDON.—Accepted for pulling down and re-building 49, Rupert-street, Haymarket. Messrs. Chambers & Dewes, architects. Quantities by Mr. Max Clarke:—

F. G. Minter £2,298

[No competition.]

LONDON.—Accepted for pulling down and re-building 48, Rupert-street, Haymarket. Messrs. Chambers & Dewes, architects. Quantities by Mr. Max Clarke:—

F. G. Minter £2,690

[No competition.]

LOWESTOFT.—For erecting a new hotel, Lowestoft, for Messrs. Spiers & Pond, Limited. Messrs. Lewis H. Isaacs & Henry L. Florence, architects, 3, Verulam-buildings, Grays Inn, W.C. Quantities supplied by Messrs. Young & Brown, 7, Southampton-street, W.C.:—

For Foundations.

F. Bennett, Ipswich (accepted) £5,350

For Superstructure.

Johnson & Co., Limited, Wandsworth Common* 70,893

* Accepted.

MYNYDDISLWYN (Wales).—For additions, &c., to schools at Trinant and Ynysdda, for the Mynyddislwyn School Board. Mr. R. L. Roberts, architect, Abercarn and Newbridge. Quantities by architect:—

Trinant School.

W. Morgan	£520 0 0	C. F. Morgan	£410 0 0
T. L. Morgan	511 5 0	E. Williams, Newbridge*	396 7 6
C. Rowlands	428 11 9		
J. Jenkins	415 0 0		

Ynysdda School.

T. L. Morgan	495 10	J. Jenkins	£412 0
W. Morgan	487 0	Davies Bros.	398 0
C. F. Morgan	418 0	E. Williams, Newbridge*	397 10

* Accepted.

REDHILL.—For the superstructure of business premises for Messrs. Nicol & Son, at corner of High-street and Station-road on the Market Hall Estate. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

Pink & Moon	£5,568	W. Akers & Co.	£4,977
T. Bushby & Son	5,325	E. Worssell	4,975
J. Longley & Co.	5,260	J. Smith & Sons	4,884
C. Nightingale & Sons	5,230	S. Page	4,864
C. Parsons	5,170	E. J. Saunders	4,850
S. J. Jerrard & Sons	5,135	J. J. Carrick	4,796
Buckland & Waters	5,100	E. P. Bulled & Co.	4,720
W. H. Lorden & Sons	5,093	D. W. Barker, Croydon*	4,645

* Accepted.

Terra Cotta Dressings.

Gibbs & Canning ..... £527 0 | J. Stiff & Sons (accepted) £495 10

SHEFFIELD.—For the erection of bakehouse, &c., Button-lane and Horse-lane, Sheffield, for the directors of the Old Albion Brewery, Limited. Messrs. Hall & Fenton, architects and surveyors, 14, St. James's-row, Sheffield. Quantities by the architects:—

Chas. Roberts	£382 13 0	Marten & Hughes	£289 0 0
J. W. Dickins	366 0 0	E. Hancock	289 0 0
J. & H. Wheen	317 0 0	A. Turner	287 0 0
Thos. Roper	307 15 6	H Lardler, Sheffield (St. Barnabas-lane)*	281 0 0
Abey & Son	300 0 0		
Bee & Son	298 0 0		

* Accepted.

SUTTON (Surrey).—For levelling, kerbing, &c., Albion and Western-roads, for the Urban District Council. Mr. C. Chambers Smith, Surveyor, Public Hall, Sutton, Surrey. Quantities by Surveyor:—

Lawrence & Thicker, Clapham Common, S.W.:—

Albion-road	£747 16 0	Western-road	£401 7 6

W. Jenner, Sutton, Surrey:—

Albion-road*	£600 2 10	Western-road*	£325 4 1

* Accepted.

WEST HAM.—For the erection of covered playgrounds to the Colegrave-road Schools, Stratford. Mr. William Jacques, arcnitect, 2, Fen-court, London, E.C., Architect to the Board:—

G. W. Smith	£544	Gregar & Son	£447
Reed & Son	517	J. Noakes	405
Welsh & Son	420	J. T. Luton	404
Maddison	450	G. J. Hosking (accepted)	393

WEST HAM.—For the erection of covered playground and other works at the Bridge-road Schools, Stratford. Mr. William Jacques, Architect to the Board, 2, Fen-court, London, E.C. Quantities by Messrs. R. L. Curtis & Sons:—

W. J. Maddison	£550 0 0	Whitelaw & Wright	£509 0 0
J. Noakes	527 10 10	Welsh & Son	497 0 0
Gregar & Son	524 0 0	Reed & Son	495 0 0
G. W. Smith	523 0 0	G. J. Hosking*	486 0 0

* Accepted.

WEYBRIDGE.—For the erection of five cottages for Mr. J. Rhodes. Mr. Edgar J. Selby, architect, 8, Adelphi:—

Martin	£1,479	Young	£1,170
Hunt	1,200	Brown	1,050
Horsell	1,173	Greenfield	98

WEYBRIDGE.—For the erection of house and laundry, for Mr. J. W. Brooker. Mr. W. Mann, architect, Weybridge:—

Horsell	£2,312	Lucas	£2,050
Greenfield	2,037	Young	1,990

RESIDENCES AND SHOPS, BEXHILL-ON-SEA.—In the list of tenders for this work, published in our last issue, the name "F. G. Newton" should be F. G. Minter. The mistake was not ours.

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

HANBURY-STREET (B and G).—Removing iron troughs, and refitting old offices with separate pans and syphon cisterns; replacing the girls' teachers' closet inside the building, and alterations to lavatories and new drainage scheme:—

Second Competition.

G. Godson & Sons	£1,718 0	Ashby Bros.	£1,478 0
C. W. Killingback & Co.	1,713 0	F. & F. J. Wood	1,420 0
W. V. Goad	1,624 10	F. G. Minter	1,399 0
Unsigned	1,559 9	E. Triggs	1,340 0
Willmott & Sons	1,538 0	F. Britton	1,320 0
Lathey Bros.	1,479 0	F. Bull*	1,296 0

HEAD OFFICES.—Providing additional lavatory accommodation at foot of west staircase:—

Staines & Son	£120	J. Marsland	£95
Lathey Bros.	99	B. E. Nightingale*	79

HIGHWAY.—Covered playground for Junior Girls:—

W. Shurmur	£189	E. Jackson & Son	£165
G. Kemp	170	G. Barker*	129
F. Bull	168		

NICHOL-STREET.—Improvements—The plans include new halls for boys and girls, new staircase for girls, boiler-room and cellar; new cloak-rooms and lavatories, removing existing stepping, and re-stepping centre class-rooms, extending girls' playground on top of school, and providing small heating schemes. Revised accommodation:—Boys, 270; girls, 270; total, 540. Loss of 84 places:—

[The rooms interfered with have been placed on the seat basis].

J. Outhwaite & Son	£8,546	E. Lawrance & Sons	£7,457
J. Chessum & Sons	8,205	L. H. & R. Roberts	6,762
G. S. S. Williams & Son	8,110	J. & M. Patrick	6,436
Snewin Bros. & Co.	8,090	C. Cox	6,418
W. Shurmur	7,935	E. Triggs	6,359
J. Grover & Son	7,744	T. L. Green*	6,185

RATHFERN-ROAD — Enlargement. — Boys, 140; girls, 140; infants, 120 (seat basis); total, 400. Providing new staircase for boys' department, and additional cloak-room accommodation, and water-closets for all departments:—

J. Garrett & Son	£5,415	J. & C. Bowyer	£4,977
A. White & Co.	5,347	E. Parsons & Co.	4,924
S. Hart	5,127	J. Smith & Sons	4,869
J. Marsland	5,092	W. Johnson & Co., Ltd.	4,800
Kirk & Randall	5,076	E. P. Bulled & Co., Croydon*	4,555
Edwards & Medway	5,022		

ROLLS-ROAD.—Enlargement (including new hall)—Infants, 181 (seat basis); providing additional lavatory and cloak accommodation; and enclosing, draining, and tar-paving the additional land:—

Johnson & Co.	£5,320	J. Smith & Sons	£4,527
Edwards & Medway	4,763	W. Downs	4,396
J. Outhwaite & Son	4,547	Stimpson & Co.*	4,280

* Recommended for acceptance.

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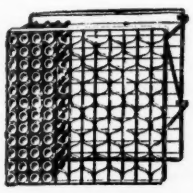

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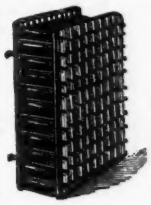

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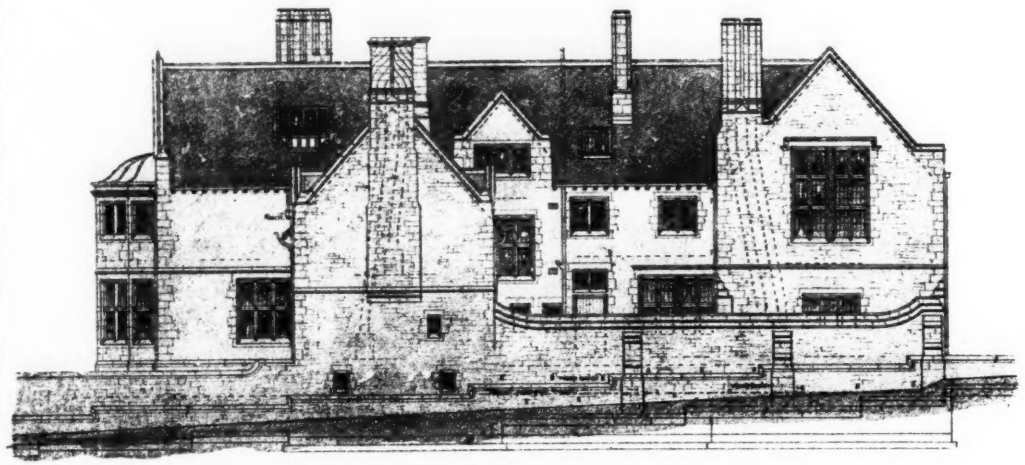

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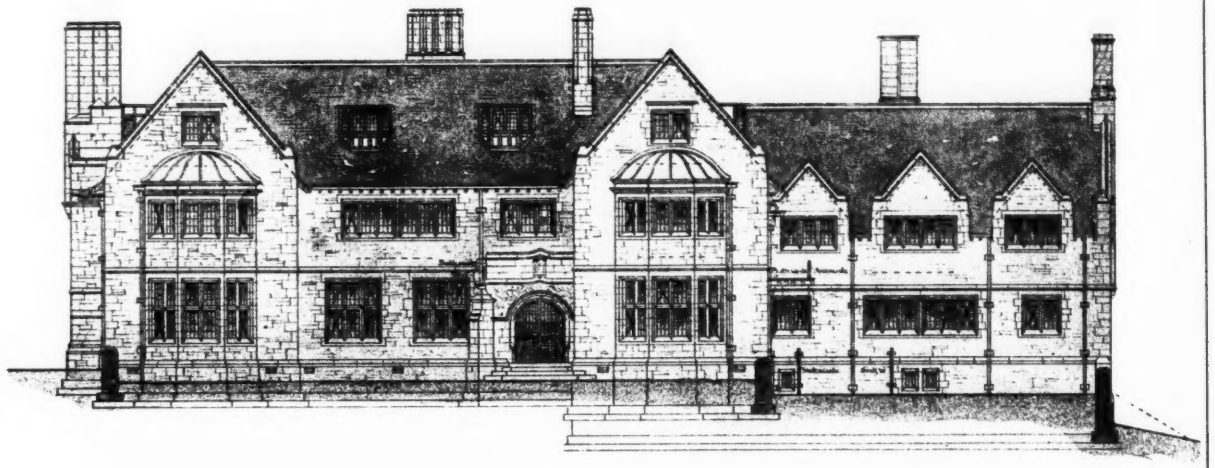

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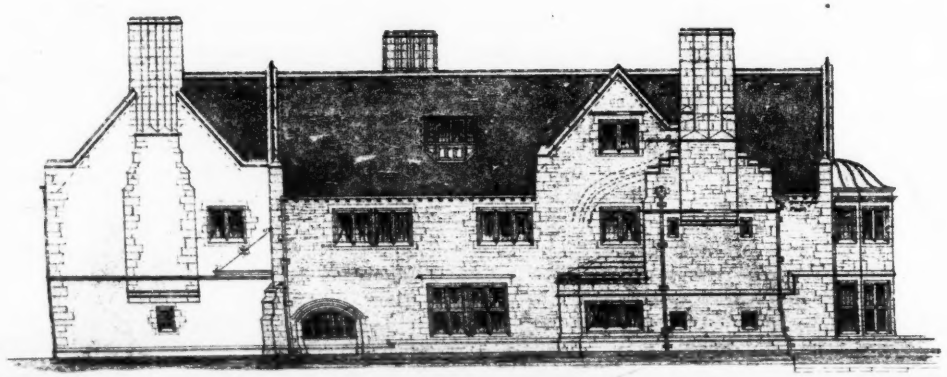

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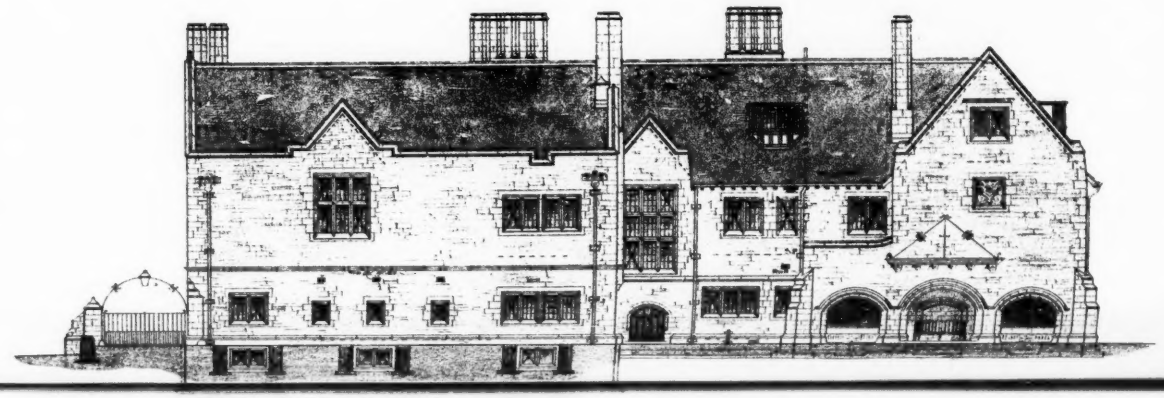

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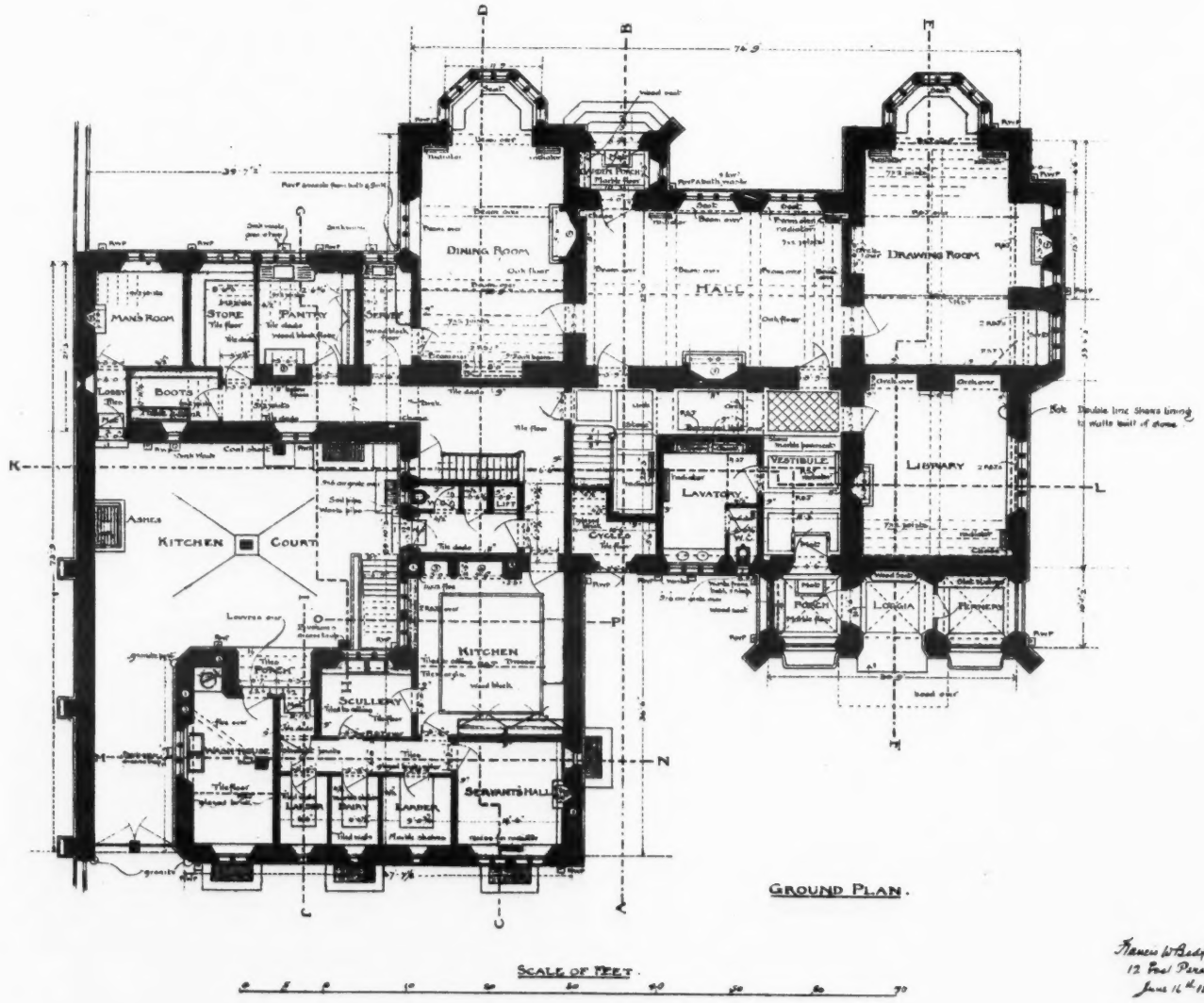

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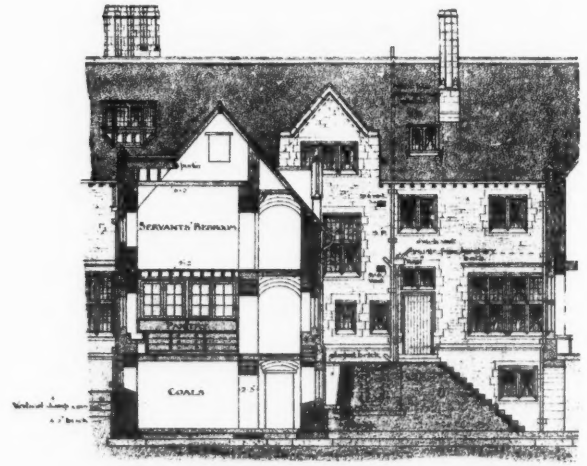

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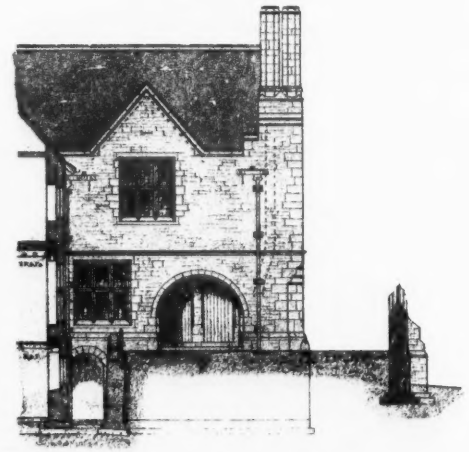

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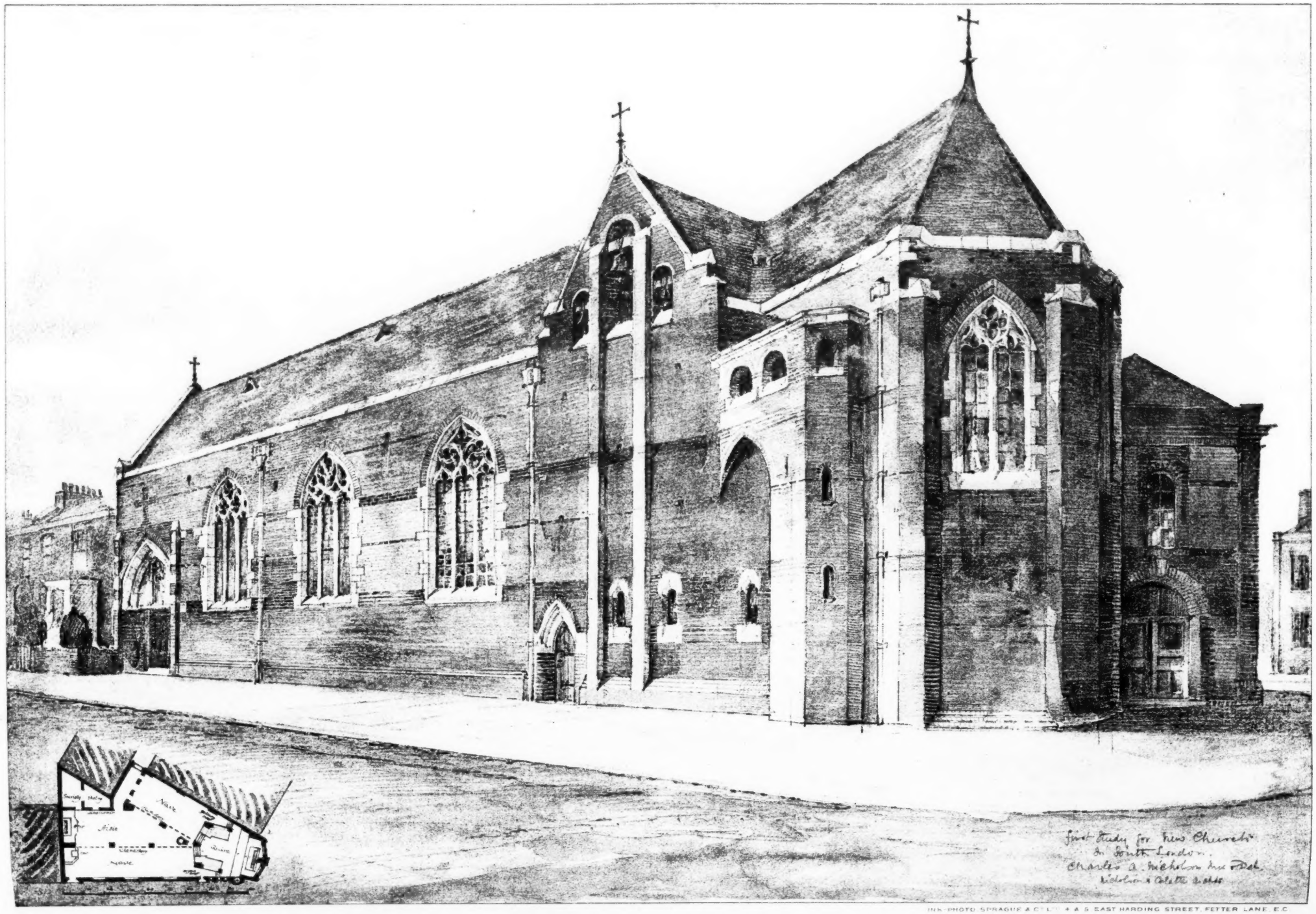

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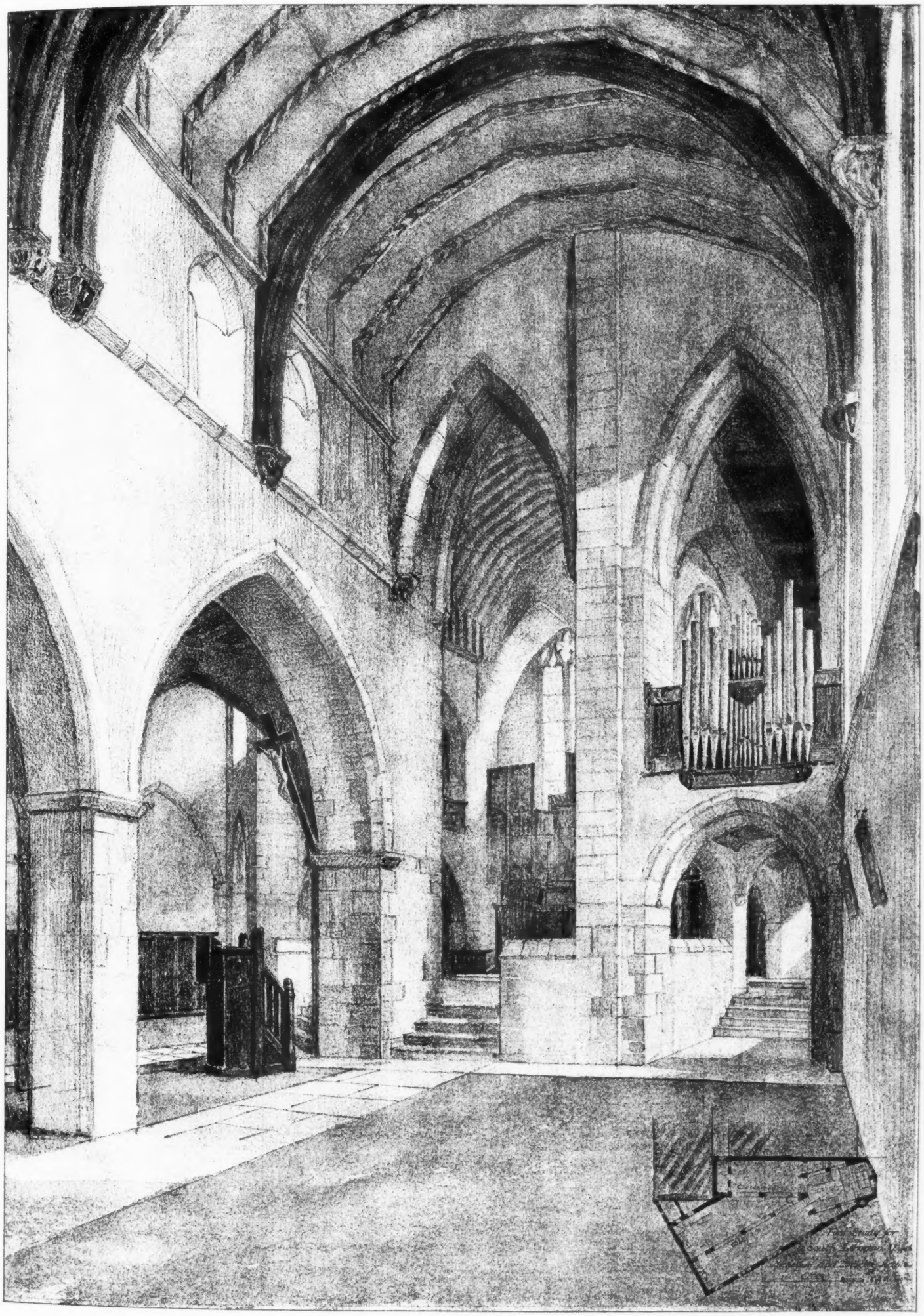

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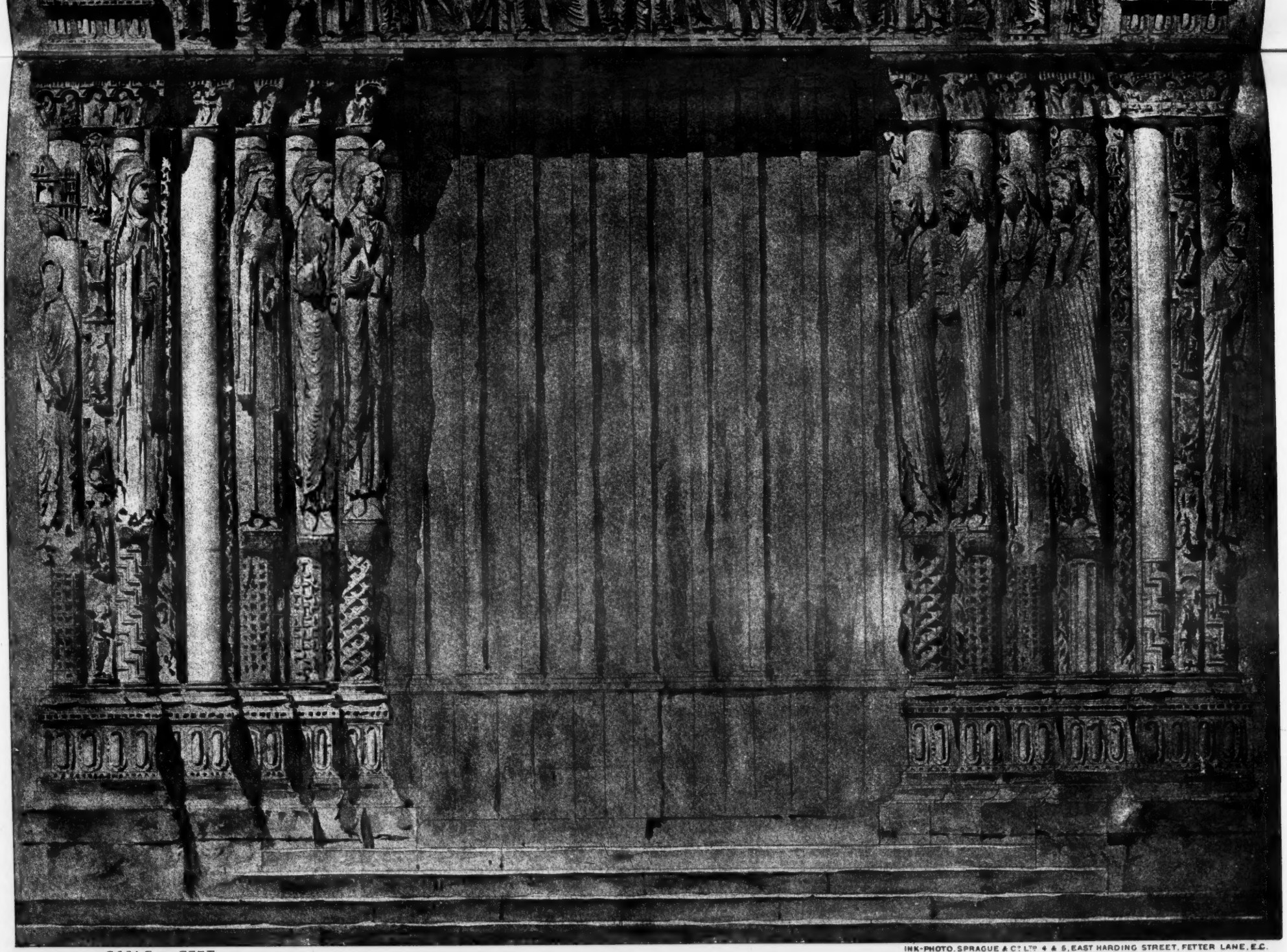

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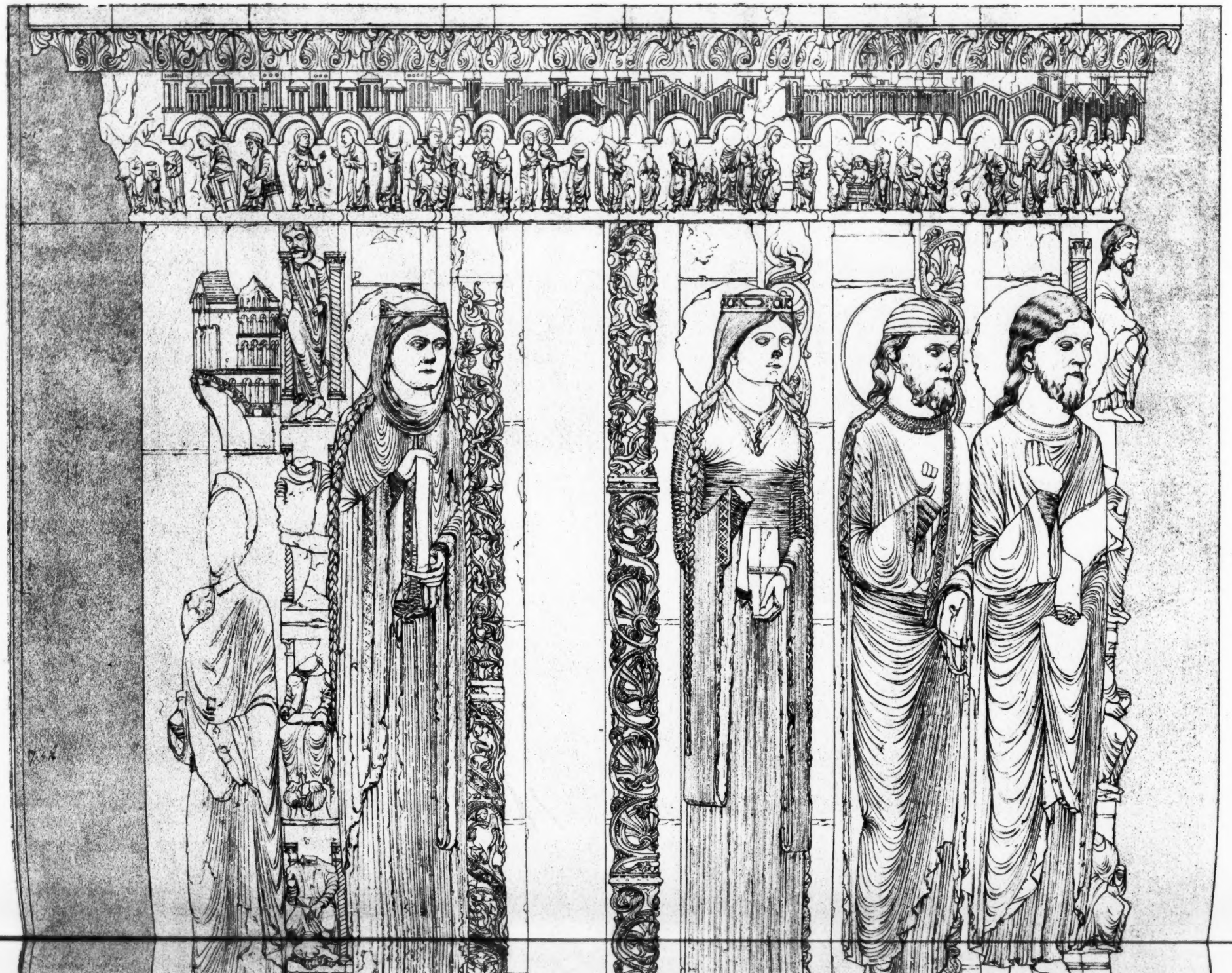

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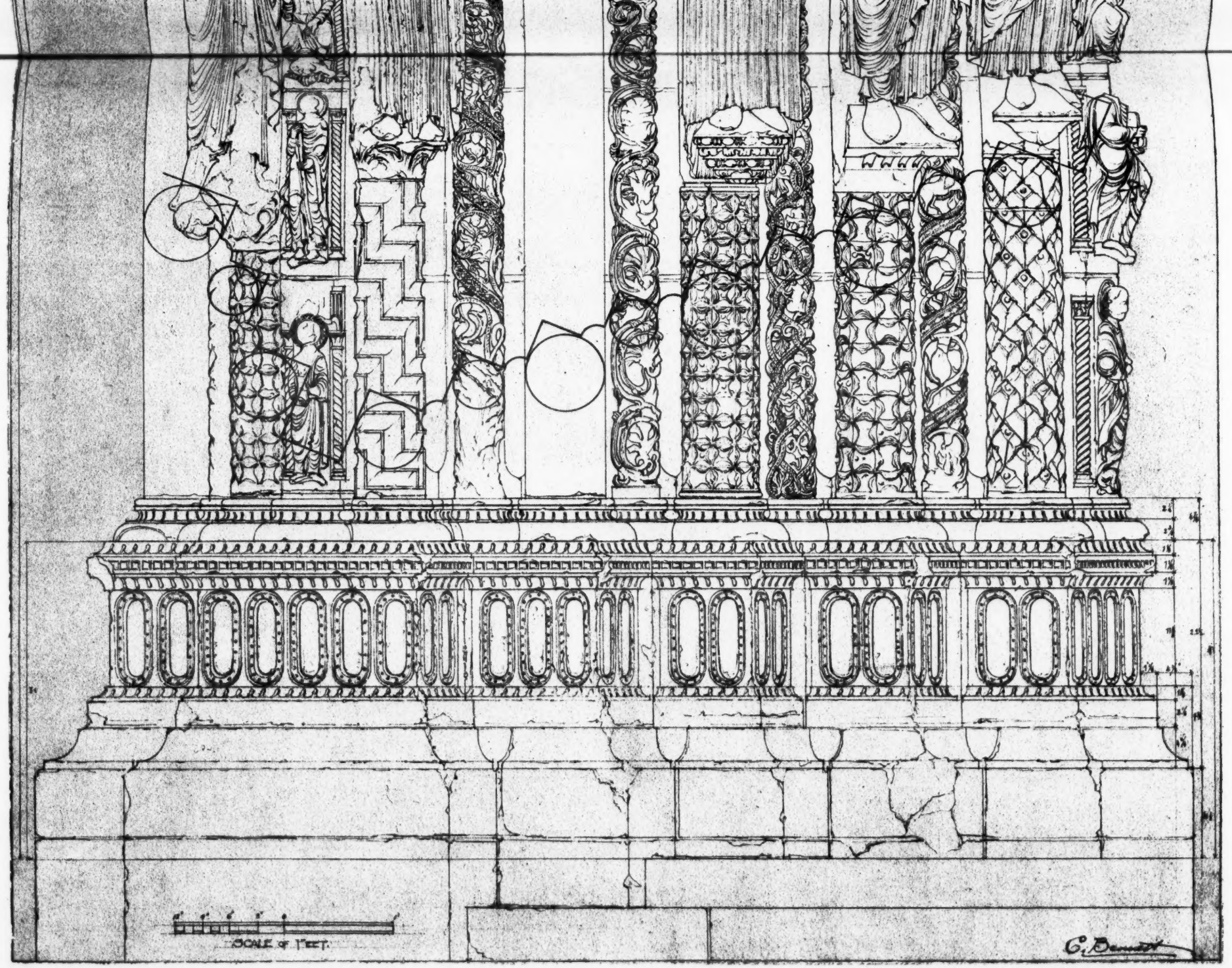

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